

CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/ TRV25PK/TRV35/TRV35E/TRV65/TRV65PK/ TRV85/TRV93/TRV215/TRV615/TRV815 RMT-708

SERVICE MANUAL

Self Diagnostics
Supported model

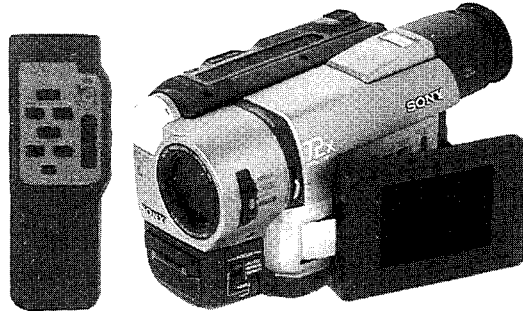


Photo : CCD-TRV93
: RMT-708

Handycam Vision™

Video 8 XR
video Hi8 XR

B MECHANISM

US Model
CCD-TRV15/TRV25/TRV65/TRV85/TRV93/
TRV215/TRV615/TRV815
Canadian Model
CCD-TRV15/TRV25/TRV65/TRV93/
TRV215/TRV615
E Model
CCD-TRV15/TRV15EP/TRV15PK/TRV25PK/
TRV35/TRV35E/TRV65PK
AEP Model
UK Model
East European Model
North European Model
Russian Model
CCD-TRV15E/TRV35E
Hong Kong Model
CCD-TRV15/TRV35/TRV35E
Tourist Model
CCD-TRV35/TRV35E
Australian Model
Chinese Model
CCD-TRV35E
Brazilian Model
CCD-TRV15/TRV65

SPECIFICATIONS

For MECHANISM ADJUSTMENTS, refer to
the "8mm Video MECHANICAL ADJUSTMENT
MANUAL VII" (9-973-801-11).

Video camera recorder System

Video recording system
CCD-TRV65/TRV65PK/TRV85/TRV93/
TRV615/TRV815 : 4 rotary heads (SP/
LP independent heads)
CCD-TRV15/TRV15PK/TRV15E/
TRV15EP/TRV25/TRV25PK/TRV35/
TRV35E/TRV215 : 2 Rotary heads
Helical scanning FM system
Audio recording system
Rotary heads, FM system
Video signal
CCD-TRV15/TRV15PK/TRV25/
TRV25PK/TRV35/TRV65/TRV65PK/
TRV85/TRV93/TRV215/TRV615/
TRV815 :
NTSC color, EIA standards
CCD-TRV15E/TRV15EP/TRV35E :
PAL color CCIR standards
Usable cassette
8mm video format cassette
CCD-TRV15/TRV15PK/TRV15E/
TRV15EP/TRV25/TRV25PK/TRV35/
TRV35E/TRV215 : standard 8
CCD-TRV65/TRV65PK/TRV85/TRV93/
TRV615/TRV815 : Hi8 or standard 8

Recording / Playback time
CCD-TRV15/TRV15PK/TRV25/
TRV25PK/TRV35/TRV65/TRV65PK/
TRV85/TRV93/TRV215/TRV615/
TRV815 :
(using 120 min. cassette)
SP mode: 2 hours
LP mode: 4 hours
CCD-TRV15E/TRV15EP/TRV35E :
(using 90 min. cassette)
SP mode: 1 hour and 30 minutes
LP mode: 3 hours
Fastforward/rewind time
CCD-TRV15/TRV15PK/TRV25/
TRV25PK/TRV35/TRV65/TRV65PK/
TRV85/TRV93/TRV215/TRV615/
TRV815 :
(using 120 min. cassette) Approx. 5 min.
CCD-TRV15E/TRV15EP/TRV35E :
(using 90 min. cassette) Approx. 5 min.
Image device
CCD (Charge Coupled Device)
Viewfinder
Electronic viewfinder
CCD-TRV15/TRV15PK/TRV15E/
TRV15EP/TRV25/TRV25PK/TRV35/
TRV35E/TRV65/TRV65PK/TRV85/
TRV215/TRV615/TRV815 :
Monochrome
CCD-TRV93 :
Color 113,578 (521 x 218)

Lens
Combined power zoom lens
Filter diameter 17/16 in. (37 mm)
CCD-TRV15 (US,CND)/TRV15E
(AEP,UK)/TRV25 (AEP,UK)/TRV215 :
16 x (Optical), 64 x (Digital)
CCD-TRV15 (E,HK,BR)/TRV15PK/
TRV15E (NE,EE,RU)/TRV15EP/
TRV25PK : 16 x (Optical), 200 x
(Digital)
TRV35E (AEP,UK)/TRV65/TRV85/
TRV93/TRV615/TRV815 :
18 x (Optical), 72 x (Digital)
CCD-TRV35E
(EE,NE,RU,E,AUS,HK,CN,JE)/
TRV65PK :
18 x (Optical), 220 x (Digital)

Focal distance
CCD-TRV15/TRV15PK/TRV15E/
TRV15EP/TRV25/TRV25PK/TRV215 :
3/16 - 2 5/8 in. (4.1 - 65.6 mm)
CCD-TRV35/TRV35E/TRV65/
TRV65PK/TRV85/TRV93/TRV615/
TRV815 : 3/16 - 8 in. (4.1 - 73.8 mm)
When converted to a 35 mm still camera
CCD-TRV15/TRV15PK/TRV15E/
TRV15EP :
1 9/16 - 24 7/8 in. (39.4 - 630 mm)
CCD-TRV25/TRV25PK/TRV215 :
1 7/8 - 29 3/4 in. (47.2 - 755 mm)
CCD-TRV35/TRV35E/TRV65/
TRV65PK/TRV85/TRV93/TRV615/
TRV815 :
1 7/8 - 33 1/2 in. (47.2 - 850 mm)

— Continued on next page —

8VIDEO CAMERA RECORDER

CCD-TRV15/TRV15E/TRV15PK/TRV15EP/TRV25/
TRV25PK/TRV35/TRV35E/TRV215

Hi8VIDEO CAMERA RECORDER

CCD-TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815



SONY®

Color temperature

Auto

Minimum illumination

CCD-TRV15/TRV15PK 0.4 lux (F1.4)

CCD-TRV15E/TRV15EP 0.4 lux (F

1.4)(Visible minimum low light 0.2 lux)

CCD-TRV25/TRV25PK/TRV35/

TRV35E/TRV65/TRV65PK/TRV85/

TRV93/TRV215/TRV615/TRV815

0.7 lux (F1.4)

CCD-TRV35/TRV35E/TRV65/

TRV65PK/TRV85/TRV93/TRV615/

TRV815

0 lux (in NightShot mode)*

* Object invisible for the dark can be shot with infrared lighting

Illumination range

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP 0.4 lux to 100,000 lux

CCD-TRV25/TRV25PK/TRV35/

TRV35E/TRV65/TRV65PK/TRV85/

TRV93/TRV215/TRV615/TRV815

0.7 lux to 100,000 lux

Recommended illumination

More than 100 lux

LCD screen

Picture

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV65/TRV65PK/TRV215/

TRV615

2.5 inches measured diagonally

2 x 1 1/2 in (50.3 x 37.4 mm)

CCD-TRV85/TRV815

3.5 inches measured diagonally

2 7/8 x 2 in (72.4 x 50.4 mm)

CCD-TRV93

3 inches measured diagonally

2 3/8 x 1 3/4 in (59.5 x 43.2 mm)

On-screen display

TN LCD/TFT active matrix method

Total dot number

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV65/TRV65PK/TRV215/

TRV615 61,380 (279 x 220)

CCD-TRV85/TRV815

105,380 (479 x 220)

CCD-TRV93 89,622 (383 x 234)

Input and output connectors

S video input/output(CCD-TRV65/

TRV65PK/TRV85/TRV93/TRV615/

TRV815 only)

4-pin mini DIN

Luminance signal 1 Vp-p, 75 ohms,

unbalanced

Chrominance signal 0.286 Vp-p, 75

ohms, unbalanced

Video input(CCD-TRV65/TRV65PK/

TRV85/TRV93/TRV615/TRV815

only)/output

Phono jack, 1 Vp-p, 75 ohms, unbalanced

Audio input (CCD-TRV65/TRV65PK/

TRV85/TRV93/TRV615/TRV815

only)/output

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV215

Monaural, Phone jack, 327 mV

CCD-TRV65/TRV65PK/TRV85/

TRV93/TRV615/TRV815 Phono jacks

(2 stereo L and R) 327 mV, (at output

impedance 47 kilohms) impedance less

than 2.2 kilohms

RFU DC OUT

Special minijack, DC 5V

Headphone jack(CCD-TRV65/

TRV65PK/TRV85/TRV93/TRV615/

TRV815 only)

Stereo minijack (ø 3.5 mm)

Earphone jack(CCD-TRV15/

TRV15PK/TRV15E/TRV15EP/

TRV25/TRV25PK/TRV35/TRV35E/

TRV215 only)

Monaural minijack (ø 3.5 mm)

LANC control jack

Stereo minijack (ø 2.5 mm)

MIC jack

Mini jack, 0.388mV low impedance

with 2.5 to 3.0 V DC, output impedance

6.8 kilohms (ø 3.5 mm)

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV215 Monaural type

CCD-TRV65/TRV65PK/TRV85/

TRV93/TRV615/TRV815 Stereo type

Speaker

Dynamic speaker

Intelligent accessory shoe(CCD-

TRV65/TRV65PK/TRV85/TRV93/

TRV615/TRV815 only)

8-pin connector

General

Power requirements

7.2 V (battery pack)

8.4 V (AC power adaptor)

Average power consumption(when using the battery pack)

During camera recording using

LCD

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP 3.1 W

CCD-TRV25/TRV25PK/TRV35/

TRV35E/TRV215 3.2 W

CCD-TRV65/TRV65PK/TRV615

3.3 W

CCD-TRV85/RV815 3.6 W

CCD-TRV93 3.4 W

Viewfinder

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP 2.5 W

CCD-TRV25/TRV25PK/TRV35/

TRV35E/TRV215 2.6 W

CCD-TRV65/TRV65PK/TRV85/

TRV615/TRV815 2.7 W

CCD-TRV93 2.6 W

Operating temperature

32°F to 104°F(0°C to 40°C)

Storage temperature

-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx)

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV65/TRV65PK/TRV215/

TRV615

4 1/4 x 4 1/4 x 8 1/4 in

(107 x 107 x 209 mm)(w/h/d)

CCD-TRV85/TRV815

4 1/2 x 4 3/8 x 8 1/2 in

(114 x 111 x 214 mm)(w/h/d)

CCD-TRV93

4 1/2 x 4 3/8 x 8 1/2 in

(114 x 109 x 214 mm)(w/h/d)

Mass (Approx)

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV215

1 lb 15 oz (890 g)

CCD-TRV35/TRV35E/TRV65/

TRV65PK/TRV615 1 lb 15 oz (900 g)

CCD-TRV85/TRV815 2 lb 1 oz (950 g)

CCD-TRV93 2 lb (930 g)

excluding the battery pack, lithium

battery, cassette and shoulder strap

2 lb 3 oz (1 kg)

including the battery pack NP-F330,

lithium battery CR2025, cassette and

shoulder strap

Microphone

CCD-TRV15/TRV15PK/TRV15E/

TRV15EP/TRV25/TRV25PK/TRV35/

TRV35E/TRV215 Monaural type

CCD-TRV65/TRV65PK/TRV85/TRV93/

TRV615/TRV815 Stereo type

Supplied accessories

See page 4

AC power adaptor

Power requirements

100 -240 V AC, 50/60 Hz

Power consumption

23 W

Output voltage

DC OUT 8.4 V, 1.5 A in operating mode

Operating temperature

32°F to 104°F(0°C to 40°C)

Storage temperature

-4°F to +140°F(-20°C to +60°C)

Dimensions (Approx)

5 x 1 9/16 x 2 1/2 in (125 x 39 x 62

mm)(w/h/d) excluding projecting parts

Mass (Approx)

9.8 oz (280 g) excluding power cord

(Main lead)

Design and specifications are subject to change without notice

• Abbreviation

CND Canadian Model

EE East European Model

NE North European Model

RU Russian Model

HK Hong Kong Model

AUS Australian Model

JE Tourist Model

CN Chinese Model

BR Brazilian Model

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or contact high-wattage resistors
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY MARK $\triangle$ OR DOTTED LINE WITH MARK $\triangle$ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

5. Check the B+ voltage to see it is at the values specified
6. Flexible Circuit board Repairing
 - Keep the temperature of the soldering iron around 270°C during repairing
 - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times)
 - Be careful not to apply force on the conductor when soldering or unsoldering.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE $\triangle$ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Table for difference of function

Model	CCD-TRV15	CCD-TRV15/ TRV15PK	CCD-TRV15E	CCD-TRV15EP	CCD-TRV25	CCD-TRV25PK	CCD-TRV215	CCD-TRV35	CCD-TRV35E	Remark	
Destination	US,CND	E,HK,BR	AEP,UK,EE, NE,RU	E	US,CND	E	US,CND	E,HK,JE	AEP,UK,EE, NE,RU	E,HK,AUS, CN,JE	
Classification	TYPE A			TYPE G			TYPE C			TYPE F	
Color System	NTSC	NTSC	PAL	PAL	NTSC	NTSC	NTSC	NTSC	PAL	PAL	
Hi8	X	X	X	X	X	X	X	X	X	X	
Standard 8	O	O	O	O	O	O	O	O	O	O	
Lens	16X	16X	16X	16X	16X	16X	16X	18X	18X	18X	
Optical	64X	200X	64X(Not 1)	200X	64X	200X	64X	220X	72X(Not 2)	220X	
Digital	510H	510H	510H	510H	760H	760H	760H	760H	760H	760H	
CCD	X	X	X	X	X	X	X	X	X	X	
Night shot	X	X	X	X	X	X	X	X	X	X	
Steady shot	X	X	X	X	X	X	X	X	X	X	
3heads/3heads	X	X	X	X	X	X	X	X	X	X	
Audio System	Mono	Mono	3heads Mono	3heads Mono	3heads Mono	3heads Mono	3heads Mono	3heads Mono	3heads Mono	3heads Mono	
TBC&DNR	X	X	X	X	X	X	X	X	X	X	
VTR REC	X	X	X	X	X	X	X	X	X	X	
Laser Link	X	X	X	X	X	X	X	X	X	X	
Color EVF	X	X	X	X	X	X	X	X	X	X	
B/W EVF	O	O	O	O	O	O	O	O	O	O	
LCD	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	2.5 inch	
Monitor IN	X	X	X	X	X	X	X	X	X	X	
Intelligent Accessory Shoe	X	X	X	X	X	X	X	X	X	X	
Normal Accessory Shoe	X	X	X	X	X	X	X	X	X	X	
Video light	X	X	X	X	X	X	X	X	X	X	
Display window indicator backlight	X	X	X	X	X	X	X	X	X	X	
Manual Focus	X	X	X	X	X	X	X	X	X	X	

Model	CCD-TRV65	CCD-TRV65/ TRV65PK	CCD-TRV615	CCD-TRV85	CCD-TRV815	CCD-TRV93	Remark
Destination	US,CND	BR/E	US,CND	US	US	US,CND	
Classification	TYPE B			TYPE E			
Color System	NTSC	NTSC	NTSC	NTSC	NTSC	NTSC	
Hi8	O	O	O	O	O	O	With S VIDEO terminal
Standard 8	X	X	X	X	X	X	
Lens	18X	18X	18X	18X	18X	18X	16X : LSV601A, 18X : LSV600A
Optical	220X	220X	72X	72X	72X	72X	
Digital	760H	760H	760H	760H	760H	760H	
CCD	X	X	X	X	X	X	
Night shot	O	O	O	O	O	O	O : LSV600A
Steady shot	O	O	O	O	O	O	O : with SE-66/67 board SE451,452,IC451
3heads/3heads	5heads	5heads	5heads	5heads	5heads	5heads	
Audio System	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	
TBC&DNR	O	O	O	O	O	O	
VTR REC	O	O	O	O	O	O	
Laser Link	O	O	O	O	O	O	O : with VC-195 board IC204
Color EVF	X	X	X	X	X	X	O : with FK-8500 block S005,007
B/W EVF	O	O	O	O	O	O	O : with VC-195 board IC751
LCD	2.5 inch	2.5 inch	2.5 inch	3.5 inch	3.5 inch	3 inch	O : with VF-119,120 board, LB-54 board
Monitor IN	O	O	O	O	O	O	O : with VF-99 board
Intelligent Accessory Shoe	O	O	O	O	O	O	2.5 inch : PD-92 board, 3/3.5 inch : PD-93 board
Normal Accessory Shoe	X	X	X	X	X	X	O : with VC-195 board X151
Video light	X	X	X	X	X	X	O : with VC-195 board CN909
Display window indicator backlight	O	O	O	O	O	O	O : with VL-19 board
Manual Focus	O	O	O	O	O	O	O : with CF-50/51 board Q003,005

Note1 : EE,NE,RU model is 200X

Note2 : EE,NE,RU model is 220X

• Abbreviation

CND : Canadian Model

EE : East European Model

NE : North European Model

RU : Russian Model

HK : Hong Kong Model

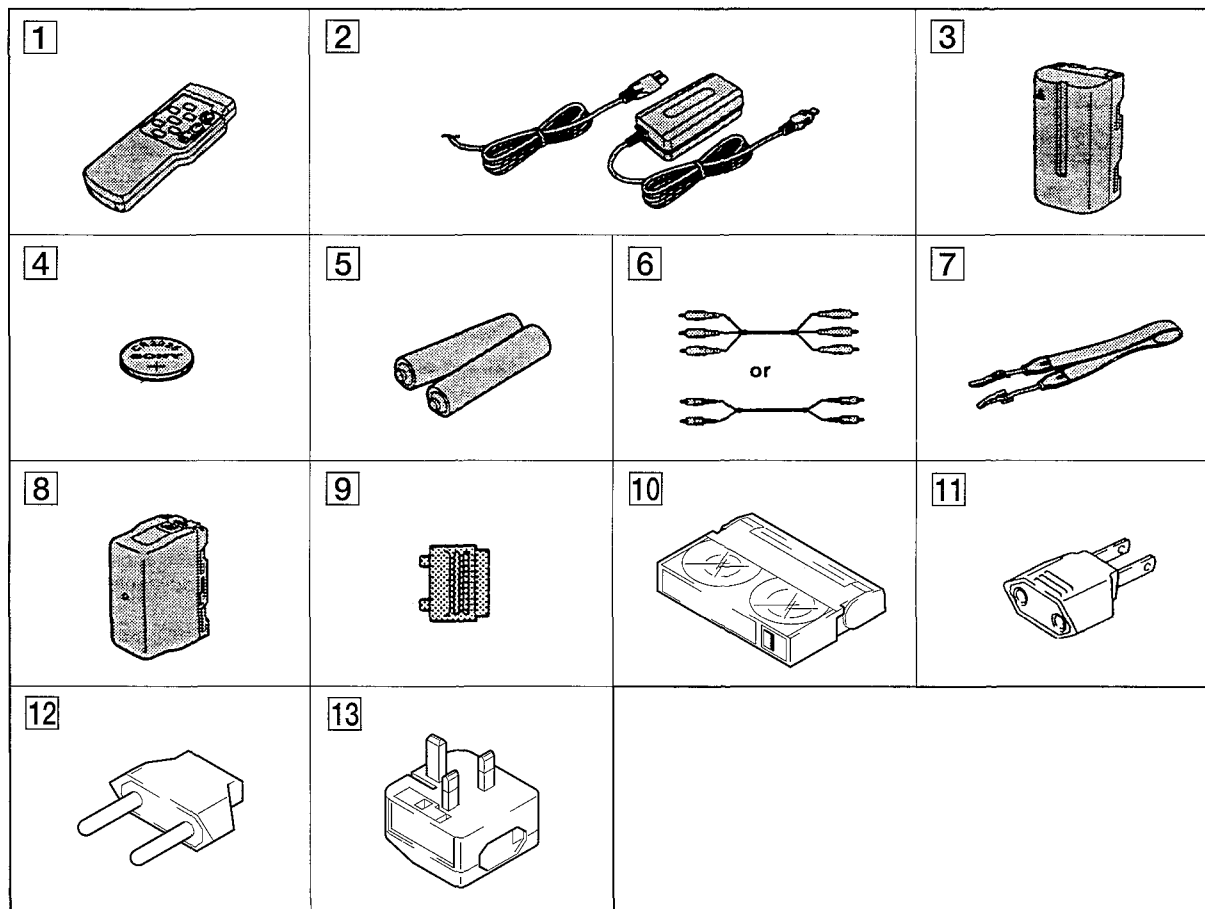
AUS : Australian Model

JE : Tourist Model

CN : Chinese Model

BR : Brazilian Models

Supplied accessories



- 1 Wireless Remote Commander (1)**
- 2 AC-L10A/L10B/L10C AC power adaptor**
- 3 NP-F330 Battery pack (1)**
- 4 CR2025 Lithium Battery (1)**
The lithium battery is already installed in your camcorder.
- 5 Size AA (R6) battery for Remote Commander (2)**
- 6 A / V connecting cable (1)**
Stereo : CCD-TRV65/TRV65PK/TRV615/TRV85/TRV815/
TRV93
Monaural : Except CCD-TRV65/TRV65PK/TRV615/TRV85/
TRV815/TRV93
- 7 Shoulder strap (1)**
- 8 Battery case (1)**
CCD-TRV15 (US, CND)/TRV25/TRV65/TRV85/TRV93
- 9 21 pin adaptor (1) MVC-89**
CCD-TRV15E/35E : AEP, EE, NE, RU, UK
- 10 8mm tape**
CCD-TRV15E only
- 11 2 pin conversion adaptor (1)**
CCD-TRV15 : E, HK/TRV15PK/TRV25PK/TRV35 : E, HK/
TRV35E : E, HK
- 12 2 pin conversion adaptor (1)**
CCD-TRV35 : JE/TRV35E : JE
- 13 3 pin conversion adaptor (1)**
CCD-TRV15 : HK/TRV35 : HK

- Abbreviation
- CND : Canadian Model
- EE : East European Model
- NE : North European Model
- RU : Russian Model
- HK : Hong Kong Model
- AUS : Australian Model
- JE : Tourist Model
- CN : Chinese Model
- BR : Brazilian Models

SERVICE NOTE

1. POWER SUPPLY DURING REPAIRS

In this unit, about 10 seconds after power is supplied (8.4V) to the battery terminal using the service power cord (J-6082-223-A), the power is shut off so that the unit cannot operate.

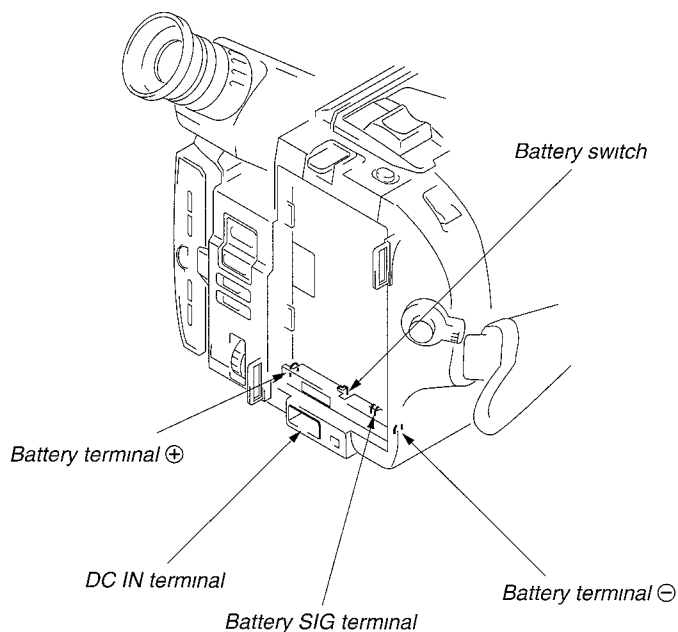
The following two methods are available to prevent this. Take note of which to use during repairs.

Method 1.

Connect the servicing remote commander RM-95 (J-6082-053-B) to the LANC jack, and set the remote commander switch to the "ADJ" side.

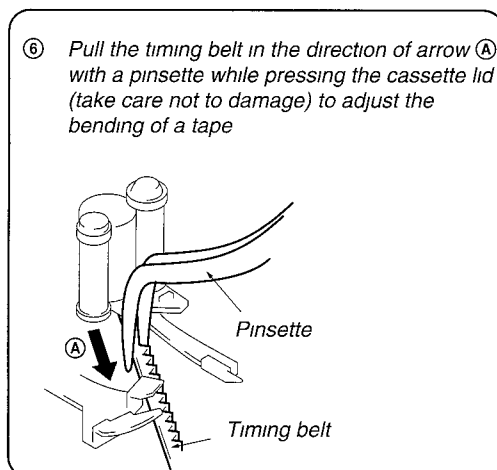
Method 2.

Use the DC IN terminal (Use the AC power adaptor.)

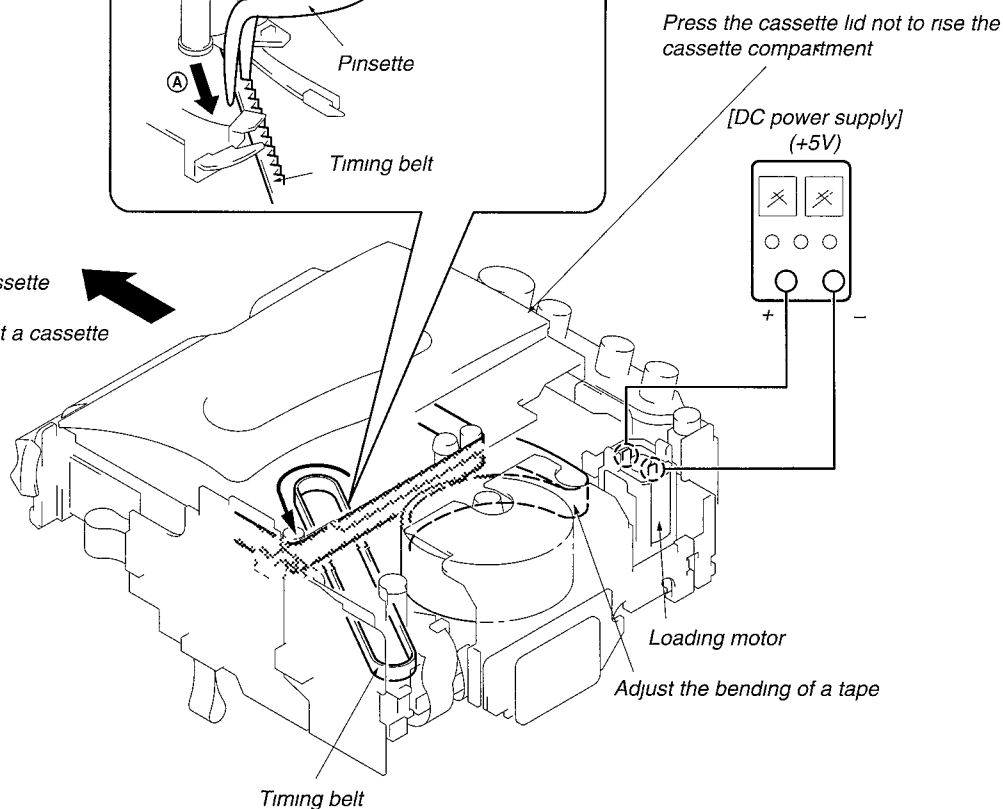


2. TO TAKE OUT A CASSETTE WHEN NOT EJECT (FORCE EJECT)

- ① Refer to 2-1-1 to remove the front panel assembly
- ② Refer to 2-1-2 to remove the cabinet (R) assembly
- ③ Refer to 2-1-11 to remove the battery panel assembly
- ④ Refer to 2-1-13 to remove the cabinet (L) assembly
- ⑤ Add +5V from the DC POWER SUPPLY and unload with a pressing the cassette lid



- ⑦ Let go your hold the cassette lid and rise the cassette compartment to take out a cassette

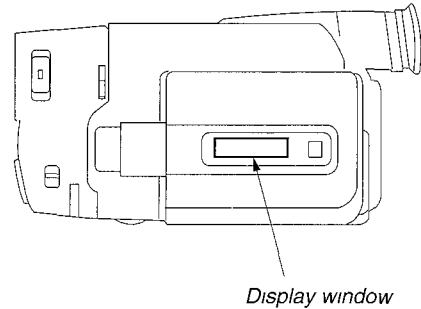
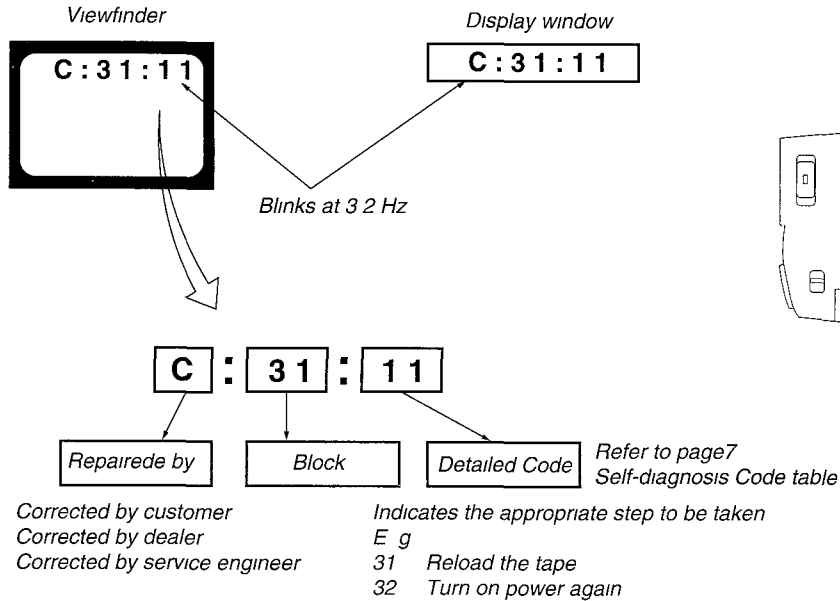


SELF-DIAGNOSIS FUNCTION

1. Self-diagnosis Function

When problems occur while the unit is operating, the self-diagnosis function starts working, and displays on the viewfinder or Display window what to do. This function consists of two display; self-diagnosis display and service mode display.

Details of the self-diagnosis functions are provided in the Instruction manual.

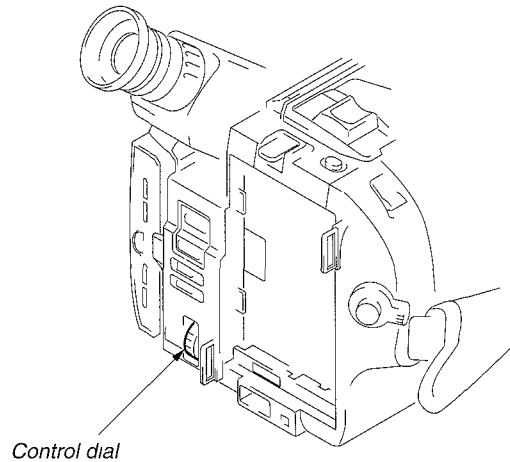
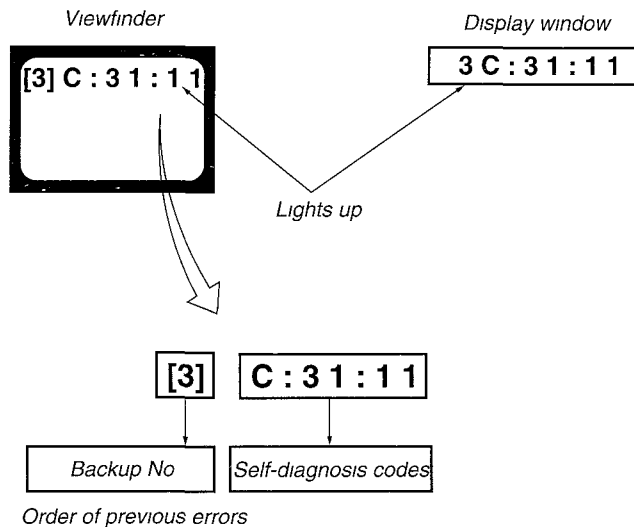


3. Service Mode Display

The service mode display shows up to six self-diagnosis codes shown in the past.

3-1. Display Method

While pressing the "STOP" key, set the switch from OFF to "VTR or PLAYER", and continue pressing the "STOP" key for 5 seconds continuously. The service mode will be displayed, and the counter will show the backup No. and the 5-character self-diagnosis codes.



3-2. Switching of Backup No.

By rotating the control dial, past self-diagnosis codes will be shown in order. The backup No. in the [] indicates the order in which the problem occurred. (If the number of problems which occurred is less than 6, only the number of problems which occurred will be shown.)

- | | |
|--------------------------|----------------------------|
| [1] Occurred first time | [4] Occurred fourth time |
| [2] Occurred second time | [5] Occurred fifth time |
| [3] Occurred third time | [6] Occurred the last time |

3-3. End of Display

Turning OFF the power supply will end the service mode display.

Note: The self-diagnosis display data will be backed up by the coin-type lithium battery. When this coin-type lithium battery is disconnected, the self-diagnosis data will be lost by initialization.

4. Self-diagnosis Code Table

Self-diagnosis Code					Symptom/State	Correction
Repaired by.	Block Function	Detailed Code				
C	2	1	0	0	Condensation.	Remove the cassette, and insert it again after one hour
C	2	2	0	0	Video head is dirty.	Clean with the optional cleaning cassette.
C	2	3	0	0	Non-standard battery is used.	Use the InfoLITHIUM battery
C	3	1	1	0	LOAD direction Loading does not complete within specified time	Load the tape again, and perform operations from the beginning
C	3	1	1	1	UNLOAD direction Loading does not complete within specified time	Load the tape again, and perform operations from the beginning
C	3	1	2	0	T reel side tape slacking when unloading	Load the tape again, and perform operations from the beginning
C	3	1	2	1	S reel side tape slacking when unloading	Load the tape again, and perform operations from the beginning.
C	3	1	2	2	T reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	2	3	S reel fault	Load the tape again, and perform operations from the beginning.
C	3	1	3	0	FG fault when starting capstan	Load the tape again, and perform operations from the beginning.
C	3	1	3	1	FG fault during normal capstan operations	Load the tape again, and perform operations from the beginning
C	3	1	4	0	FG fault when starting drum	Load the tape again, and perform operations from the beginning
C	3	1	4	1	PG fault when starting drum	Load the tape again, and perform operations from the beginning
C	3	1	4	2	FG fault during normal drum operations	Load the tape again, and perform operations from the beginning
C	3	1	4	3	PG fault during normal drum operations	Load the tape again, and perform operations from the beginning
C	3	1	4	4	Phase fault during normal drum operations	Load the tape again, and perform operations from the beginning.
C	3	2	1	0	LOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	1	1	UNLOAD direction loading motor time-out	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	2	0	T reel side tape slacking when unloading	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	2	1	S reel side tape slacking when unloading.	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	2	2	T reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	2	3	S reel fault	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	3	0	FG fault when starting capstan	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	3	1	FG fault during normal capstan operations	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	0	FG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning.
C	3	2	4	1	PG fault when starting drum	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	4	2	FG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	4	3	PG fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning
C	3	2	4	4	Phase fault during normal drum operations	Remove the battery or power cable, connect, and perform operations from the beginning
E	6	1	0	0	Difficult to adjust focus (Cannot initialize focus)	Inspect the lens block focus reset sensor (Pin ①⑨ of CN551 of VC-195 board) when focusing is performed when the focus dial is rotated in the focus manual mode and the focus motor drive circuit (IC552 of VC-195 board) when the focusing is not performed Note Use the remote commander RM-95 only for the model without the focus dial.
E	6	1	1	0	Zoom operations fault (Cannot initialize zoom lens)	Inspect the lens block zoom reset sensor (Pin ②① of CN551 of VC-195 board) when zooming is performed when the zoom lens is operated and the zoom motor drive circuit (IC552 of VC195 board) when zooming is not performed
E	6	2	0	0	Handshake correction function does not work well (With pitch angular velocity sensor output stopped)	Inspect pitch angular velocity sensor (SE451 of SE-66/67 board) peripheral circuits
E	6	2	0	1	Handshake correction function does not work well (With yaw angular velocity sensor output stopped)	Inspect yaw angular velocity sensor (SE452 of SE-66/67 board) peripheral circuits

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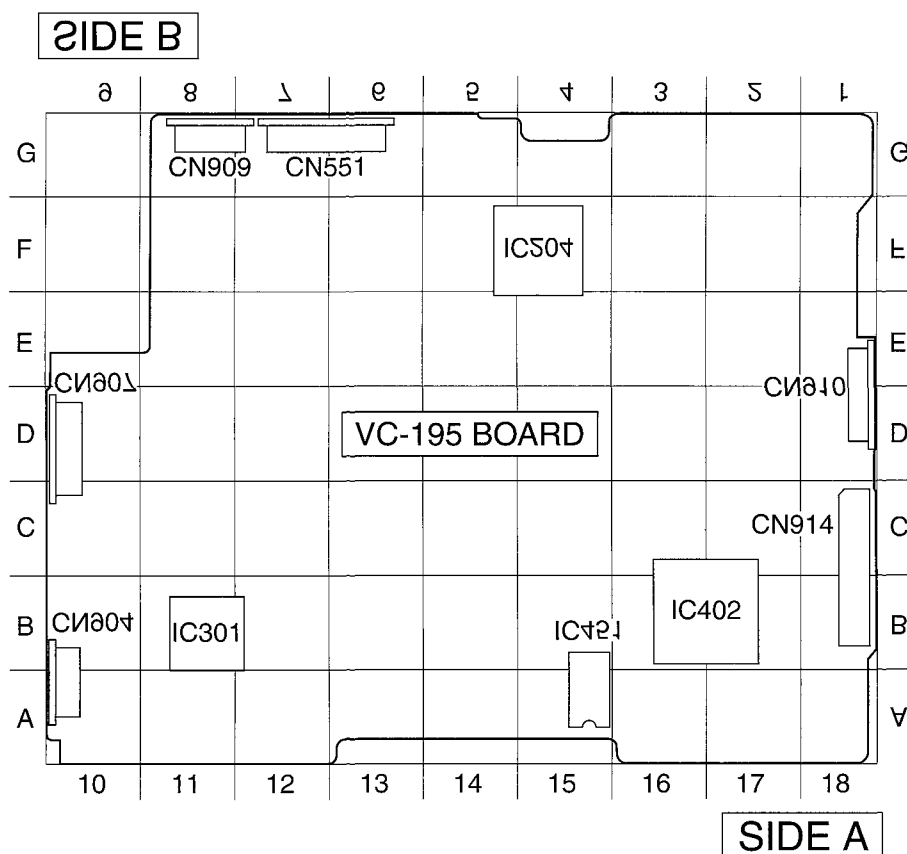
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< PARTS REFERENCE SHEET >

You can find the parts position of mount locations applying to boards of a set

Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use

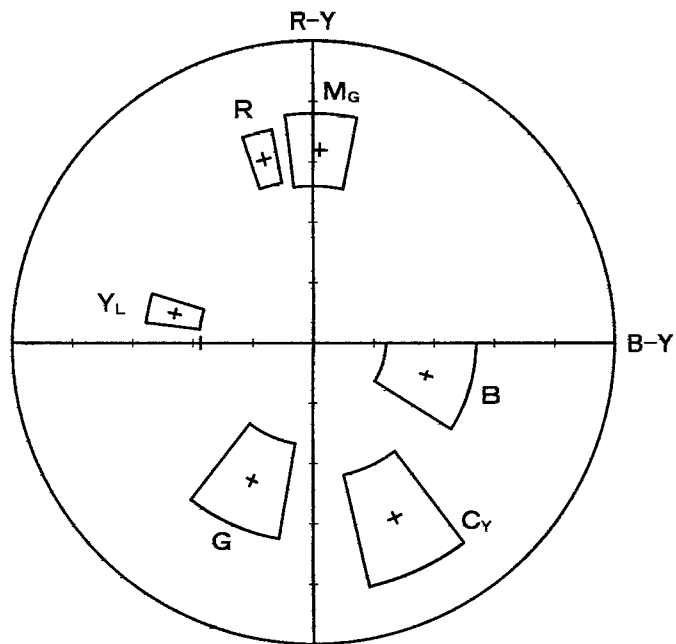


CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/TRV65/
TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

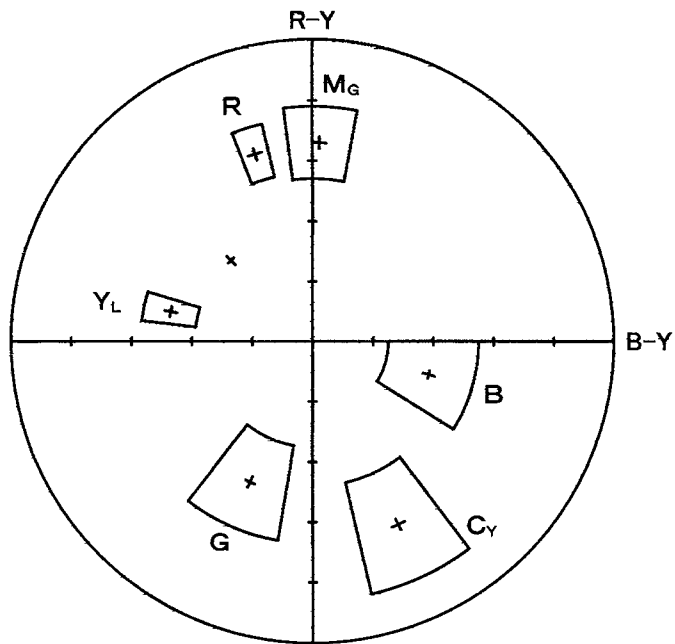
Take a copy CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

For NTSC 510H model



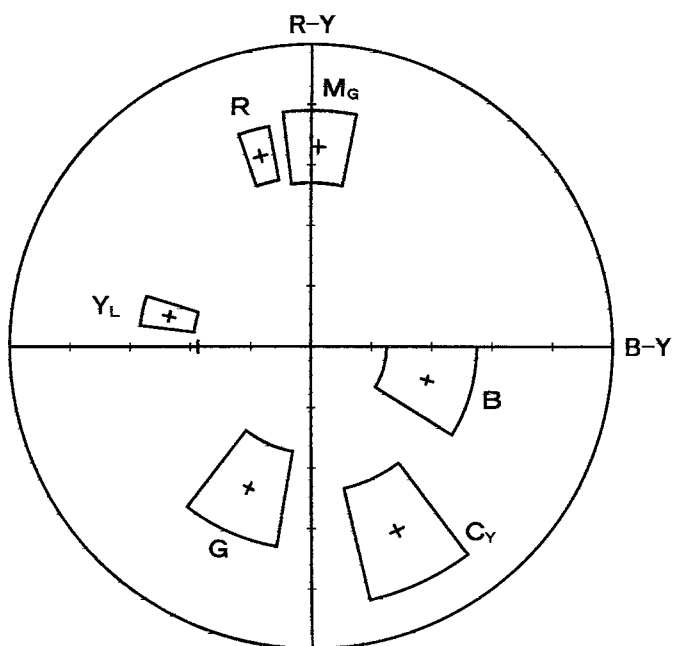
CCD-TRV15/TRV15PK

For PAL 510H, 760H model



CCD-TRV15E/TRV15EP/TRV35E

For NTSC 760H model



CCD-TRV25/TRV25PK/TRV35/TRV65/TRV65PK/
TRV85/TRV93/TRV215/TRV615/TRV815

**CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815**

CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

SECTION 1
GENERAL

This section is extracted
from instruction manual of
CCD-TRV15/25/35/65/615.

Before you begin
Using this manual

The instructions in this manual are for the seven models listed below. Before you start reading this manual and operating the unit, check your model number by looking at the bottom of your camcorder. The CCD-TRV65 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "CCD-TRV65 only."

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.

e.g. Set the POWER switch to CAMERA.

You can hear the beep sound to confirm your operation.

Types of differences

CCD-	TRV15	TRV25/TRV215	TRV35	TRV65/TRV615
System				
VIDEO/AUDIO IN*	—	—	—	
S VIDEO	—	—	—	
Optical zoom	16x	16x	18x	18x
Digital zoom	64x	64x	72x	72x
NightShot	—	—		
Steady Shot	—			
LASER LINK	—	—		
Fader function	—	—		
Stripe	—	—	—	
Manual focus	—	—		
Exposure	—	—		
Audio	monaural	monaural	monaural	stereo

* The models without VIDEO/AUDIO IN have CAMERA, OFF and PLAYER mode on the POWER switch.

Using this manual

Note on TV color systems

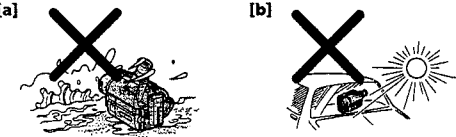
TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

Precaution on copyright

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

Precautions on camcorder care

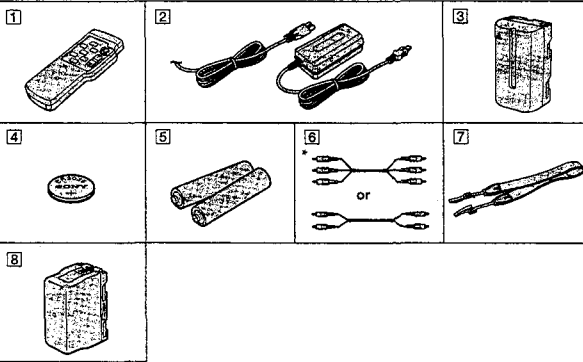
- The LCD screen and/or the color viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue or green in color) that constantly appear on the LCD screen and/or in the viewfinder. These points are normal in the manufacturing process and do not affect the recorded picture in any way. Over 99.99% are operational for effective use.
- Do not let the camcorder get wet. Keep the camcorder away from rain and sea water. Letting the camcorder get wet may cause the unit to malfunction, and sometimes this malfunction cannot be repaired [a].
- Never leave the camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight [b].



Before you begin

Checking supplied accessories

Check that the following accessories are supplied with your camcorder.



- 1 Wireless Remote Commander (1) (p. 84)
- 2 AC-L10A/L10B/L10C AC power adaptor (1), Power cord (1) (p. 8, 26)
- 3 NP-F330 Battery pack (1) (p. 7, 26)
- 4 CR2025 Lithium Battery (1) (p. 59)
The lithium battery is already installed in your camcorder.
- 5 Size AA (R6) battery for Remote Commander (2) (p. 85)
- 6 A/V connecting cable (1) (p. 54)
*for stereo model
- 7 Shoulder strap (1) (p. 85)
- 8 Battery case (1) (p. 27)
CCD-TRV15/TRV25/TRV35/TRV65 only

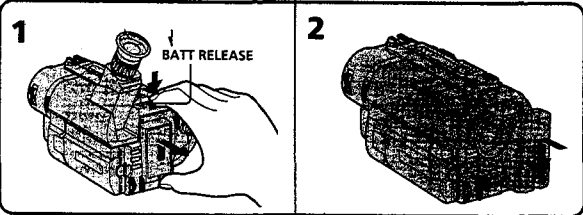
Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

Getting started
Installing and charging the battery pack

Before using your camcorder, you first need to install and charge the battery pack.

Installing the battery pack

- (1) While pressing BATT RELEASE, slide the battery terminal cover in the direction of the arrow.
- (2) Install the battery pack in the direction of the ▼ mark on the battery pack. Slide the battery pack down until it catches on the battery release lever and clicks. Attach the battery pack to the camcorder securely.



Note on the battery pack
Do not carry the camcorder by grasping the battery pack.

Getting started

Installing and charging the battery pack

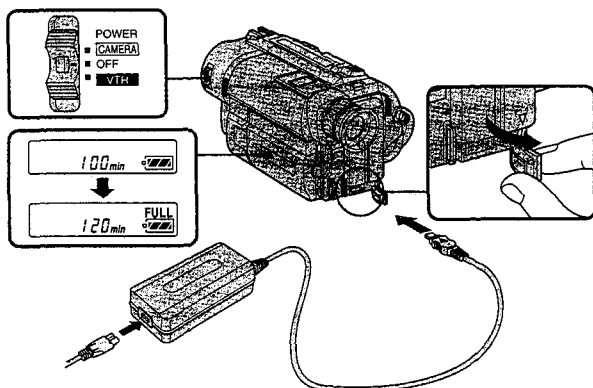
Charging the battery pack

Charge the battery pack on a flat surface without vibration. The battery pack is charged a little in the factory.

- (1) Open the DC IN jack cover and connect the supplied AC power adaptor to the DC IN jack with the plug's ▲ mark up.
- (2) Connect the power cord to the AC power adaptor.
- (3) Connect the power cord to a wall outlet.
- (4) Slide the POWER switch to OFF. Remaining battery time is indicated by the minutes on the display window. Charging begins.

When the remaining battery indicator becomes ■■■, normal charge is completed. For full charge, which allows you to use the battery longer than usual, leave the battery pack attached for about 1 hour after normal charge is completed until FULL appears in the display window.

Before using the camcorder with the battery pack, unplug the AC power adaptor from the DC IN jack of the camcorder. You can also use the battery pack before it is completely charged.



Notes

- "--- min" appears in the display window until the camcorder calculates remaining battery time.
- Remaining battery time indication in the display window roughly indicates the recording time with the viewfinder. Use it as a guide. It may differ from the actual recording time.

Installing and charging the battery pack

Charging time

Battery pack	NP-F330 (supplied)	NP-F530 / F550	NP-F730 / F750H / F750	NP-F930 / F950
Charging time* (min.)	150 (90)	210 (150)	300 (240)	390 (330)

The time required for a normal charge is indicated in parentheses.

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor. (Lower temperatures require a longer charging time.)

Battery life

Upper numbers are the time when recording with the viewfinder. Lower numbers are the time when recording with the LCD screen. Using both will further reduce recording time.

CCD-TRV15

Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H / F750	NP-F930	NP-F950
Continuous recording time*	130 (115) 100 (90)	225 (200) 170 (155)	260 (230) 205 (185)	450 (405) 350 (310)	530 (480) 425 (380)	710 (640) 555 (500)	815 (730) 650 (590)
Typical recording time**	65 (60) 55 (45)	115 (105) 90 (85)	135 (120) 110 (100)	235 (210) 190 (170)	280 (250) 230 (205)	375 (335) 305 (275)	430 (385) 355 (320)
Playing time on LCD	100 (90)	165 (150)	200 (180)	335 (300)	410 (365)	535 (480)	630 (570)

CCD-TRV25/TRV35/TRV215

Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H / F750	NP-F930	NP-F950
Continuous recording time*	125 (110) 100 (90)	215 (190) 165 (150)	250 (220) 200 (180)	430 (385) 335 (300)	510 (460) 410 (365)	680 (610) 535 (480)	780 (700) 630 (570)
Typical recording time**	65 (55) 55 (45)	110 (100) 90 (80)	130 (115) 110 (95)	225 (200) 180 (165)	270 (240) 225 (200)	360 (320) 290 (260)	410 (370) 345 (310)
Playing time on LCD	100 (90)	165 (150)	200 (180)	335 (300)	410 (365)	535 (480)	630 (570)

Installing and charging the battery pack

CCD-TRV65/TRV615

Battery pack	NP-F330 (supplied)	NP-F530	NP-F550	NP-F730	NP-F730H / F750	NP-F930	NP-F950
Continuous recording time*	120 (105) 95 (85)	205 (180) 160 (145)	240 (210) 195 (175)	410 (370) 325 (290)	490 (440) 395 (355)	650 (585) 515 (465)	750 (675) 610 (550)
Typical recording time**	60 (55) 50 (45)	105 (95) 85 (75)	125 (110) 105 (95)	215 (195) 175 (155)	255 (230) 215 (195)	340 (310) 280 (255)	395 (355) 335 (300)
Playing time on LCD	95 (85)	160 (145)	195 (175)	325 (290)	395 (355)	515 (465)	610 (550)

Numbers in parentheses indicate the time when you use a normally charged battery. Battery life will be shorter if you use the camcorder in a cold environment.

* Approximate continuous recording time at 77°F (25°C).

** Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

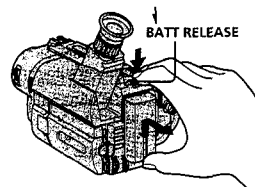
Notes on remaining battery time indication during recording

- Remaining battery time is displayed in the viewfinder or on the LCD screen. However, the indication may not be displayed properly, depending on using conditions and circumstances.
- When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining time to be displayed.

Installing and charging the battery pack

To remove the battery pack

While pressing BATT RELEASE, slide the battery pack in the direction of the arrow.

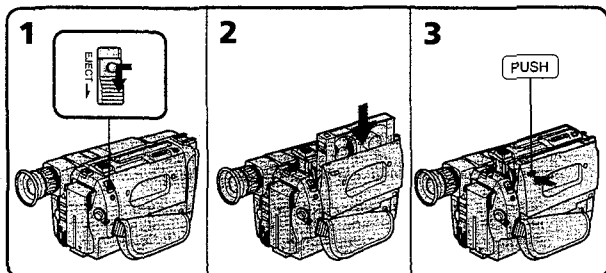


You can look at the demonstration of the functions available with this camcorder (p. 32).

Inserting a cassette

Make sure that the power source is installed. When you want to record in the Hi8 system, use Hi8 video cassette **Hi8**. (CCD-TRV65/TRV615 only)

- (1) While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow. The cassette compartment automatically lifts up and opens.
- (2) Insert a cassette with the window facing out.
- (3) Close the cassette compartment by pressing the "PUSH" mark on the cassette compartment. The cassette compartment automatically goes down.



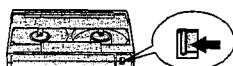
To eject the cassette

While pressing the small blue button on the EJECT switch, slide it in the direction of the arrow.

To prevent accidental erasure

Slide the tab on the cassette to expose the red mark. If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the and indicators flash, and you cannot record.

To re-record on this tape, slide the tab back out covering the red mark.



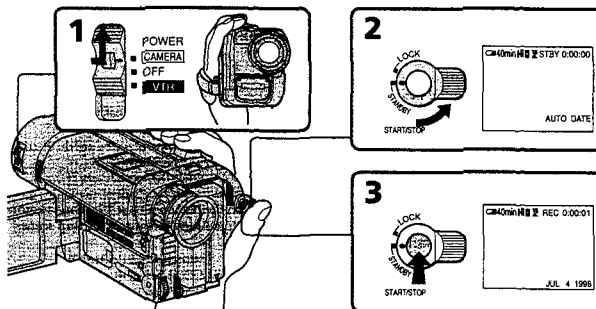
Basic operations

Camera recording

Make sure that the power source is installed and a cassette is inserted and that the START/STOP MODE switch inside the LCD panel is set to . Before you record one-time events, you may want to make a trial recording to make sure that the camcorder is working correctly.

When you use the camcorder for the first time, power on it and reset the date and time to your time before you start recording (p. 61). The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day.

- (1) While pressing the small green button on the POWER switch, set it to CAMERA.
- (2) Turn STANDBY up to STANDBY.
- (3) Press START/STOP. The camcorder starts recording. The "REC" indicator appears. The red lamp lights up in the viewfinder. The camera recording/battery lamp located on the front of the camcorder also lights up.

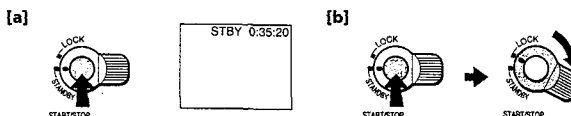


To stop recording momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder (Standby mode).

To finish recording [b]

Press START/STOP again. Turn STANDBY down to LOCK and set the POWER switch to OFF. Then, eject the cassette.



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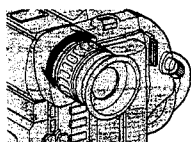
Camera recording

Note

There is a little wear on the battery pack which is installed with the camcorder. However, for getting remaining battery time indicated correctly, leave the battery pack installed after use.

To focus the viewfinder lens

If you cannot see the indicators in the viewfinder clearly, or after someone else has used the camcorder, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.



Note on Standby mode

If you leave the camcorder in Standby mode for 5 minutes while the cassette is inserted, the camcorder turns off automatically for saving battery power as well as for preventing the battery and tape from wearing down. To resume Standby mode, turn STANDBY down and up again. To start recording, press START/STOP.

Note on recording

When you record from the beginning of a tape, run the tape for about 15 seconds before starting the actual recording. This will ensure that you won't miss any start-up scenes when you play back the tape.

Notes on the tape counter

- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter as a guide, record in same (SP or LP) mode.

Note on the beep sound

The beep sounds when you operate the camcorder. Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, select "OFF" in the menu system.

Note on the AUTO DATE feature

The clock is set to East Coast Standard Time at the factory. You can reset the clock in the menu system. You can change the AUTO DATE settings by selecting ON or OFF in the menu system. The AUTO DATE feature shows the date automatically once a day. However, the date may automatically appear more than once a day when:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.
- you set AUTO DATE to OFF once and set it to ON again in the menu system.

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Camera recording

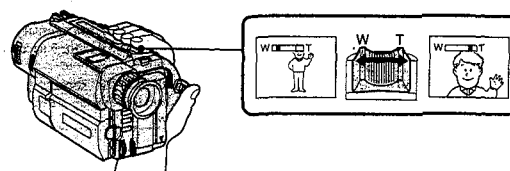
Using the zoom feature

Zooming is a recording technique that lets you change the size of the subject in the scene.

For more professional-looking recordings, use the zoom function sparingly.

"T" side: for telephoto (subject appears closer)

"W" side: for wide-angle (subject appears farther away)



Zooming speed (Variable speed zooming)

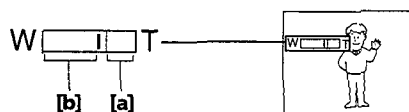
Move the power zoom lever a little for a slower zoom, move it further for a faster zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 5/8 feet (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom

- More than 16x (CCD-TRV15/TRV25/TRV215) or 18x (CCD-TRV35/TRV65/TRV615) zoom is performed digitally, and the picture quality deteriorates as you go toward the "T" side. If you do not want to use the digital zoom, set the D ZOOM function to OFF in the menu system.
- The right side [a] of the power zoom indicator shows the digital zooming zone, and the left side [b] shows the optical zooming zone. If you set the D ZOOM function to OFF, the [a] zone disappears.



Basic operations

Basic operations

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Camera recording

Setting the START/STOP mode

Your camcorder has three modes. These modes enable you to take a series of quick shots resulting in a lively video.

(1) While pressing OPEN, open the LCD panel.

(2) Set START/STOP MODE to the desired mode.

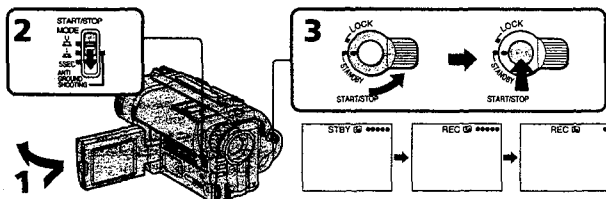
▲ : Recording starts when you press START/STOP, and stops when you press it again (normal mode).

ANTI GROUND SHOOTING ↓ : The camcorder records only while you press down START/STOP so that you can avoid recording unnecessary scenes.

5SEC: When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(3) Turn STANDBY up to STANDBY and press START/STOP. Recording starts.

If you selected 5SEC, the tape counter disappears and five dots appear. The dots disappear at a rate of one per second as illustrated below.



To extend the recording time in 5SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Notes on START/STOP mode

- If you have turned off the indicators on the LCD screen, the dots do not appear.
- You cannot use FADER in 5SEC or ↓ mode.

Camera recording

Shooting with the LCD screen

You can also record the picture while looking at the LCD screen.

When using the LCD screen, the viewfinder turns off automatically. You cannot monitor the sound from the speaker during recording.

(1) While pressing OPEN, open the LCD panel.

(2) Adjust the angle of the LCD panel.

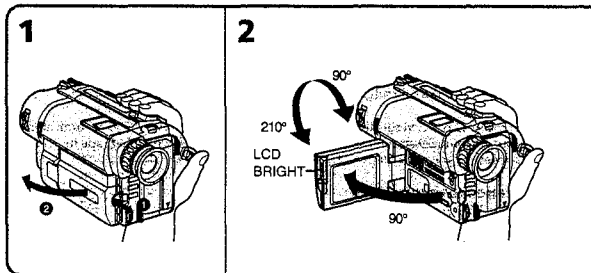
The LCD panel moves about 90 degrees to this side and about 210 degrees to the other side.

To adjust the brightness of the LCD screen, press LCD BRIGHT.

+ side: to brighten the LCD screen

- side: to dim the LCD screen

The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.



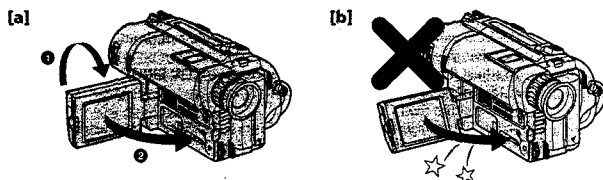
Backlighting the LCD screen

If the LCD screen is insufficiently illuminated even after adjusting LCD BRIGHT, select LCD B. L. in the menu system and set to BRIGHT. You can select LCD B. L. only while using the battery pack as a power source.

Camera recording

Notes on the LCD panel

- When closing the LCD panel, turn it vertically until it clicks [a].
- When turning the LCD panel, turn it always vertically; otherwise, the camcorder body may be damaged or the LCD panel may not close properly [b].
- Close the LCD panel completely when not in use.



Letting the subject monitor the shot (Mirror mode)

You can turn the LCD panel over so that it faces the other way and you can let the subject monitor the shot while shooting with the viewfinder.

Turn the LCD panel vertically first until it clicks, then turn it over. The ☺ indicator appears on the LCD screen (Mirror mode) and the date and remaining tape indicators disappear.

To cancel mirror mode

Turn the LCD panel back toward the viewfinder.

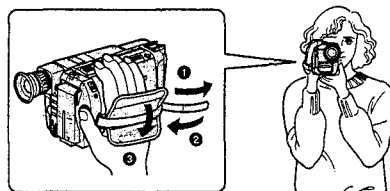
Notes on mirror mode

- The picture on the LCD looks as a mirror-image while recording in mirror mode. The STBY indicator appears as ☺ and REC as ●. The other indicators may not appear in mirror mode.
- While recording in mirror mode, you cannot operate the following buttons: TITLE, DATE, TIME and MENU.
- The date appears in reverse when the AUTO DATE feature is turned on. When recorded, it will be normal.

Hints for better shooting

For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:

- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb.



- Place your right elbow against your side.
- Place your left hand under the camcorder to support it. Be sure to not touch the built-in microphone.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can also record in a low position to get an interesting angle. Lift the viewfinder up for recording from a low position [a].
- You can also record in a low position or even in a high position using the LCD panel [b].
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.



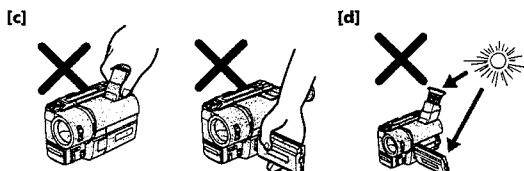
Hints for better shooting

Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder. When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

Cautions on the viewfinder and the LCD

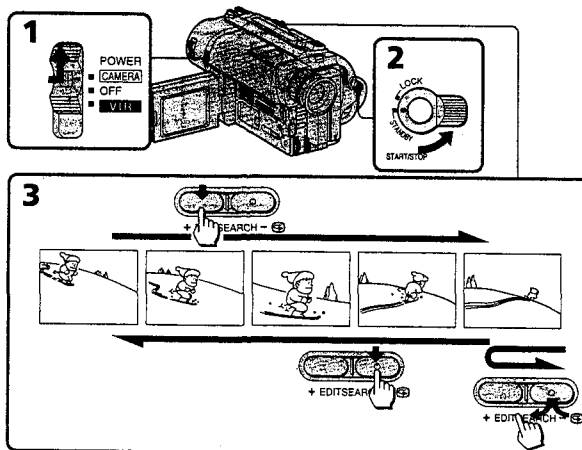
- Do not pick up the camcorder by the viewfinder or by the LCD panel [c].
- Do not place the camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder may be damaged. Be careful when placing the camcorder under sunlight or by a window [d].



Checking the recorded picture

Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder or on the LCD screen.

- While pressing the small green button on the POWER switch, set it to CAMERA.
- Turn STANDBY up to STANDBY.
- Press the - (EDITSEARCH) side of EDITSEARCH momentarily; the last few seconds of the recorded portion play back (Rec Review). You can monitor the sound from the speaker, headphones (CCD-TRV65/TRV615 only) or an earphone (CCD-TRV15/TRV25/TRV35/TRV215 only). Hold down the - side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (Edit Search).



To stop playback

Release EDITSEARCH.

To go back to the last recorded point after edit search

Press END SEARCH. The last recorded point is played back for about 5 seconds (10 seconds in LP mode) and stops. Note that this function does not work once you eject the cassette after you recorded on the tape.

To begin re-recording

Press START/STOP. Re-recording begins from the point you released EDITSEARCH. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

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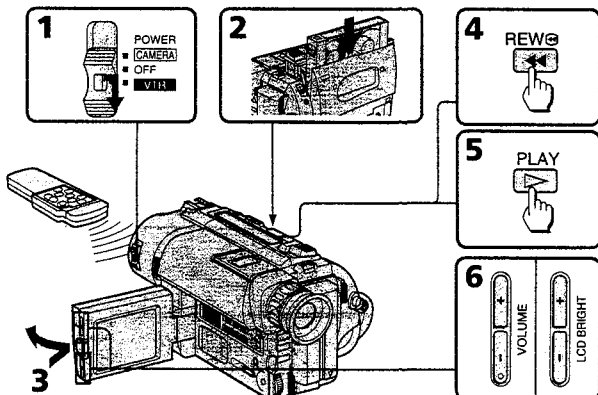
Playing back a tape

You can monitor the playback picture on the LCD screen.

- While pressing the small green button on the POWER switch, set it to VTR (CCD-TRV65/TRV615) or PLAYER (CCD-TRV15/TRV25/TRV35/TRV215). The video control buttons light up (CCD-TRV35/TRV65 TRV615 only).

- Insert the recorded tape with the window facing out.
- While pressing OPEN, open the LCD panel. Adjust the angle of the LCD panel or the brightness of the LCD screen if necessary.
- Press REW to rewind the tape.
- Press PLAY to start playback.
- Adjust the volume using VOLUME and adjust the brightness of the LCD screen using LCD BRIGHT.

You can also monitor the picture on a TV screen, after connecting the camcorder to a TV or VCR.

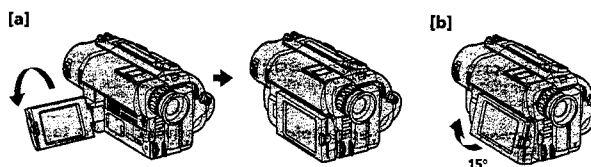


- To stop playback, press ■.
- To rewind the tape, press ◀.
- To fast-forward the tape rapidly, press ▶▶.

Playing back a tape

When monitoring on the LCD screen

You can turn the LCD panel over and move back to the camcorder with the LCD screen facing out [a]. You can adjust the angle of the LCD screen by turning the LCD screen up to 15 degrees [b].



Using the remote commander

You can control playback using the supplied Remote Commander. Before using the Remote Commander, insert the size AA (R6) batteries.

Note on DISPLAY button

Press DISPLAY to display the screen indicators on the LCD screen. To erase the indicators, press DISPLAY again. If the POWER switch is set to CAMERA, you can erase the indicator by pressing DISPLAY.

Using headphones or an earphone

Connect headphones (not supplied) to the ♪ jack (CCD-TRV65/TRV615 only) or an earphone (not supplied) to the Ⓔ jack (CCD-TRV15/TRV25/TRV35/TRV215 only). You can adjust the volume using VOLUME. When you use headphones or an earphone, the speaker on the camcorder is silent.

To view the playback picture in the viewfinder

Close the LCD panel. The viewfinder turns on automatically. When using the viewfinder, you can monitor sound only by using headphones or an earphone. To view on the LCD screen again, open the LCD panel. The viewfinder turns off automatically.

Note on the lens cover

The lens cover does not open when the POWER switch is set to VTR/PLAYER. Do not open the lens cover manually. It may cause malfunction.

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Playing back a tape

Various playback modes

You can enjoy clear pictures on the LCD screen during still, slow and picture search. (Crystal-clear still/slow/picture search)

To view a still picture (playback pause)

Press **II** during playback. To resume playback, press **II** or **▶**.

To locate a scene (picture search)

Keep pressing **◀◀** or **▶▶** during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (skip scan)

Keep pressing **◀◀** while rewinding or **▶▶** while advancing the tape. To resume normal playback, press **▶**.

To view the picture at 1/5 speed (slow playback)

Press **1/5** on the Remote Commander during playback. To resume normal playback, press **▶**. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To select the playback sound

– CCD-TRV65/TRV615 only

Change the "HiFi SOUND" mode setting in the menu system.

Notes on playback

- Noise may appear when you use the crystal-clear still/slow/picture search function to play back the tape recorded in LP mode.
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes, the camcorder automatically enters stop mode.
- You can play back the tapes recorded in the Hi8 video system on the standard 8 mm camcorder (CCD-TRV15/TRV25/TRV35/TRV215 only).

Searching for the end of the picture

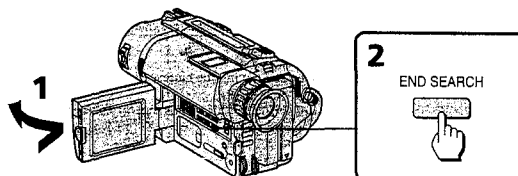
You can go to the end of the recorded portion after you record and play back the tape to make the transition between the last scene you recorded and the next scene smooth. The tape starts rewinding or fast-forwarding and the last 5 seconds (10 seconds in LP mode) of the recorded portion play back. Then the tape stops at the end of the recorded picture (End Search).

Note that the End Search function does not work once you eject the cassette after you have recorded on the tape.

(1) While pressing OPEN, open the LCD panel.

(2) Press END SEARCH.

This function works when the POWER switch is set to either CAMERA or VTR/PLAYER.



If you start recording after using END SEARCH

Occasionally, the transition between the last scene you recorded and the next scene may not be smooth.

Basic operations

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Advanced operations

Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, house current, alkaline batteries (CCD-TRV15/TRV25/TRV35/TRV65 only) and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

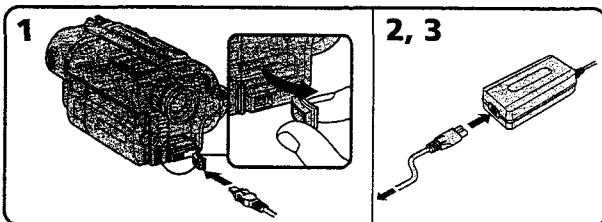
Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoors	Battery pack	Battery pack NP-F330 (supplied), NP-F530, NP-F550, NP-F730, NP-F730H, NP-F750, NP-F930, NP-F950
	Size AA (LR6) Alkaline battery	Supplied battery case (CCD-TRV15/TRV25/TRV35/TRV65 only)
In the car	12 V or 24 V car battery	Sony car battery charger DC-V515A

Notes on power sources

- Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
- The DC IN jack has power source priority. This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.

Using the house current

- Open the DC IN jack cover, and connect the AC power adaptor to the DC IN jack on the camcorder.
- Connect the power cord to the AC power adaptor.
- Connect the power cord to a wall outlet.



WARNING

The power cord must only be changed at a qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

Note

Keep the AC power adaptor away from the camcorder if the picture is disturbed.

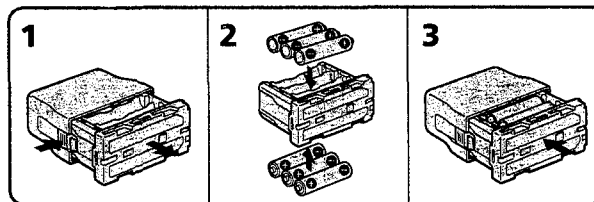
Using alternative power sources

Using alkaline batteries

– CCD-TRV15/TRV25/TRV35/TRV65 only

Use the battery case (supplied) and six size AA (LR6) Sony Alkaline batteries (not supplied).

- Remove the battery holder from the battery case.
- Insert six new alkaline batteries into the battery holder, following the marking on the holder to be sure the batteries are installed in the correct direction.
- Insert the battery holder with the alkaline batteries.
- Insert the battery case with the alkaline batteries to the battery mounting surface of the camcorder in the same way as the battery pack.



Battery life

Using alkaline batteries at 77°F (25°C).

Upper numbers are the time when recording with the viewfinder. Lower numbers are the time when recording with the LCD screen.

CCD-	TRV15	TRV25/TRV35	TRV65
Continuous recording time	305 min. 210 min.	285 min. 200 min.	265 min. 190 min.
Typical recording time	160 min. 115 min.	150 min. 110 min.	140 min. 100 min.

PRECAUTION

When the battery case is installed with the camcorder, do not connect the AC power adaptor to the camcorder.

Notes

- You may not use the battery case in cold environment.
- The battery life may be shorter depending on the using environment.
- The above battery lives are estimates. The battery life may be shorter depending on the storage condition of the battery before being purchased and temperature.

To remove the battery case

The battery case is removed in the same way as the battery pack. When you replace the batteries, be sure to remove the battery case from the camcorder to prevent malfunction.

Remove the battery case after using it.

Advanced operations

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Using alternative power sources

Using a car battery

Use Sony DC-V515A car battery charger (not supplied). Connect the car battery cord to the cigarette lighter socket of a car (12 V or 24 V). Refer to the operating instructions of your car battery charger.

To remove the car battery charger

The car battery charger is removed in the same way as the battery pack.

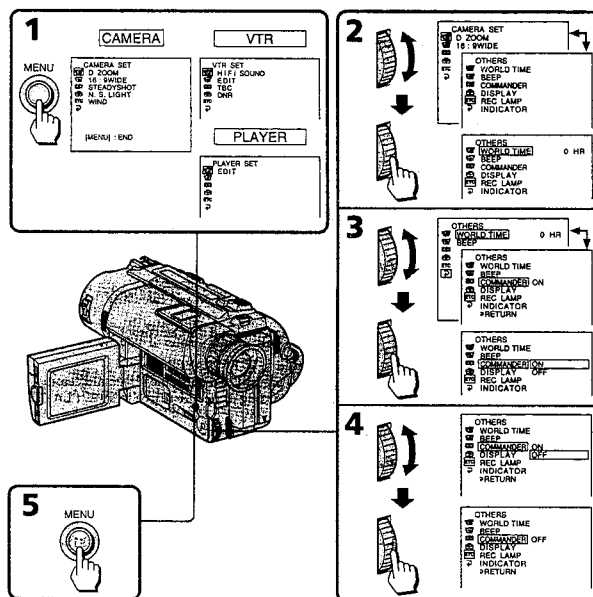


This mark indicates that this product is a genuine accessory for Sony video products. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Changing the mode settings

You can change the mode settings in the menu system to further enjoy the features and functions of the camcorder.

- (1) Press MENU to display the menu.
- (2) Turn the control dial to select the desired icon in the left side of the menu, then press the dial.
- (3) Turn the control dial to select the desired item, then press the dial.
- (4) Turn the control dial to select the desired mode, and press the dial. If you want to change the other modes, repeat steps 3 and 4. If you want to change the other items, select $\Rightarrow$ RETURN and press the dial, then repeat steps from 2 to 4.
- (5) Press MENU or select $\Rightarrow$ icon to erase the menu display.



Note on the menu display

Depending on the model of your camcorder, the menu display may be different from that in this illustration.

Advanced operations

Changing the mode settings

Notes on changing the mode setting

- Menu items differ depending on the setting of the POWER switch to VTR/PLAYER or CAMERA.
- When you let the subject monitor the shot (mirror mode), the menu display does not appear.

Selecting the mode setting of each item

Items for both CAMERA and VTR/PLAYER modes

LCD B.L.* <BRT NORMAL/BRIGHT>

- Normally select BRT NORMAL.
 - Select BRIGHT when the LCD screen is dark.
- When you select BRIGHT, battery life is about 10 percent shorter during recording. When you use the power sources other than the battery pack, BRIGHT is automatically selected, and LCD B.L. is not displayed in the menu.

LCD COLOR*

Select this item to adjust the color on the LCD screen.

REC MODE* <SP/LP>

- Select SP when recording in SP (standard play) mode.
 - Select LP when recording in LP (long play) mode.
- When a tape recorded on this camcorder in LP mode is played back on other types of 8mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.
- In PLAYER mode, this item is not displayed in the menu (CCD-TRV15/TRV25/TRV35/TRV215 only).

REMAIN* <AUTO/ON>

- Select AUTO when you want to display the remaining tape bar
 - for about 8 seconds after the camcorder is turned on and calculates the remainder of the tape.
 - for about 8 seconds after a cassette is inserted and the camcorder calculates the remainder of the tape.
 - for about 8 seconds after $\blacktriangleright$ is pressed in VTR/PLAYER mode.
 - for about 8 seconds after DISPLAY is pressed to display the screen indicators.
 - for the period of tape rewinding, forwarding or picture search in VTR/PLAYER mode.
- Select ON to always display the remaining tape indicator.

AUTO TV ON* <ON/OFF> (CCD-TRV35/TRV65/ TRV615 only)

You can use this feature only with Sony TVs.

- Select ON to turn on the TV automatically when using the LASER LINK function.
- Select OFF not to turn on the TV.

TV INPUT* <VIDEO1/VIDEO2/VIDEO3/OFF> (CCD-TRV35/TRV65/ TRV615 only)

Select 1 or 2 or 3 of the video input on the TV which the IR receiver (not supplied) is connected to when using the LASER LINK function.

LTR SIZE* <NORMAL/2x>

- Normally select NORMAL.
- Select 2x to display selected menu item by twice size of normal.

Changing the mode settings

BEEP* <ON/OFF>

- Select ON so that beeps sound when you start/stop recording, etc.
- Select OFF when you do not want to hear the beep sound.

COMMANDER <ON/OFF>

- Select ON when using the supplied Remote Commander for the camcorder.
- Select OFF when not using the Remote Commander.

DISPLAY* <LCD or V-OUT/LCD>

- Normally select LCD. The display appears on the LCD screen.
- Select V-OUT/LCD to show the display both on the TV screen and LCD screen.

INDICATOR* <BL ON/BL OFF> (CCD-TRV65/TRV615 only)

- Select BL ON to light up the display window.
 - Select BL OFF to turn off the back light of display window.
- When you use the AC power adaptor as a power source, this item is not displayed in the menu.

Items for CAMERA mode only

D ZOOM* <ON/OFF>

- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 16x (CCD-TRV15/TRV25/TRV215) or 18x (CCD-TRV35/TRV65/ TRV615) zoom.

16:9WIDE* <OFF/CINEMA/16:9FULL>

- Normally select OFF.
- Select CINEMA to record in CINEMA mode.
- Select 16:9FULL to record in 16:9FULL mode.

STEADYSHOT* <ON/OFF> (CCD-TRV25/TRV35/TRV65/TRV215/TRV615 only)

- Normally select ON.
- Select OFF to release the Steady Shot function.

N.S.LIGHT* <ON/OFF> (CCD-TRV35/TRV65/ TRV615 only)

- Normally select ON.
- Select OFF to not use the NightShot Light function.

WIND <ON/OFF> (CCD-TRV65/TRV615 only)

- Select ON to reduce wind noise when recording in strong wind.
- Normally select OFF.

Advanced operations

Changing the mode settings

ORC TO SET*

Select this item to automatically adjust the recording condition to get the best possible recording.

If you have already performed this function, "ORC ON" is displayed.

CLOCK SET*

Reset the date or time.

AUTO DATE* <ON/OFF>

- Select ON to record the date for 10 seconds after recording has started.
- Select OFF to not record the date.

DEMO MODE* <ON/OFF>

- Select ON to make the demonstration appear.
- Select OFF to deactivate the demonstration mode.

Notes on DEMO MODE

- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you set the POWER switch to CAMERA without inserting a cassette.
- Note that you cannot select STBY of DEMO MODE in the menu system.
- You cannot select DEMO MODE when a cassette is inserted in the camcorder.
- If you insert a cassette during the demonstration, the demonstration stops. You can start recording as usual. DEMO MODE automatically returns to STBY.
- When NIGHTSHOT is set to ON, "NIGHTSHOT" appears in the viewfinder or on the LCD screen and you cannot select DEMO MODE (CCD-TRV35/TRV65/TRV615 only).

To look at the demonstration at once

Eject the cassette, if inserted. Select ON of DEMO MODE and erase the menu display. The demonstration will begin. When you turn off the camcorder once, DEMO MODE automatically returns to STBY.

WORLD TIME*

Select this item to set the clock by a time difference.

REC LAMP* <ON/OFF>

- Select OFF when you do not want the camera recording/battery lamp at the front of the unit to light up.
- Normally select ON.

Changing the mode settings

Items for VTR/PLAYER mode only

HiFi SOUND <STEREO/1/2> (CCD-TRV65/TRV615 only)

- Normally select STEREO.
- Select 1 or 2 to play back a dual sound track tape.

EDIT <ON/OFF>

- Select ON to minimize picture deterioration when editing.
- Normally select OFF.

TBC* <ON/OFF> (CCD-TRV65/TRV615 only)

- Normally select ON, to correct for jitter.
- Select OFF to not correct for jitter. The picture may not be steady when played back.

Note on TBC setting

Set TBC to OFF when:

- Playing back a tape you have dubbed over.
- Playing back a tape on which you recorded the signal of a TV game or similar machine.
- The playback picture fluctuates.

DNR* <ON/OFF> (CCD-TRV65/TRV615 only)

- Normally select ON to reduce picture noise.
- Select OFF if the picture has a lot of movement, causing a conspicuous afterimage.

The following settings work only during playback

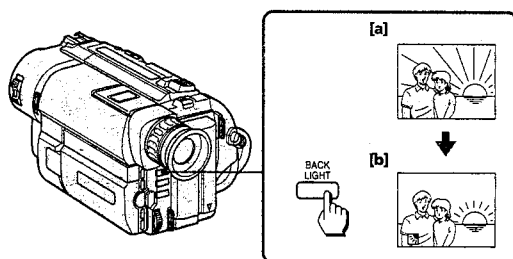
EDIT, HiFi SOUND, TBC, and DNR.

- These settings are retained even when the battery is removed, as long as the lithium battery is in place.

Shooting with backlighting

When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The indicator appears in the viewfinder or on the LCD screen.



[a] Subject is too dark because of backlight.

[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under the following conditions:

- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

To make a fine adjustment

You can adjust the exposure manually. However, when you adjust the exposure manually, BACK LIGHT does not operate.

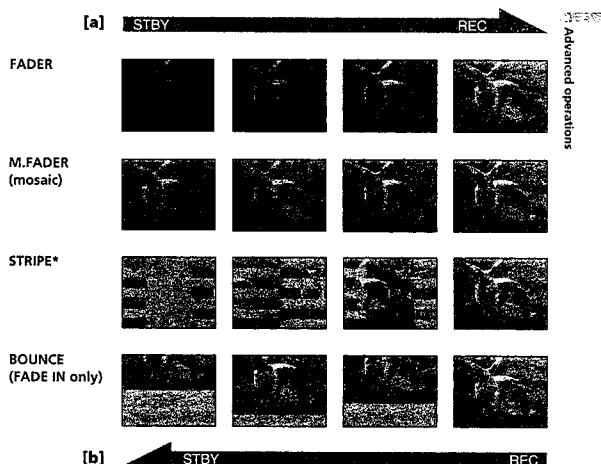
Using the FADER function

– CCD-TRV35/TRV65/TRV615 only

Selecting the fader function

You can fade in or out to give your recording a professional appearance.

When the picture fades in, the sound gradually increases. When the picture fades out, the sound gradually decreases.



MONOTONE

When fading in, the picture gradually changes from black and white to color. When fading out, the picture gradually changes from color to black and white.

* CCD-TRV65/TRV615 only

Using the FADER function

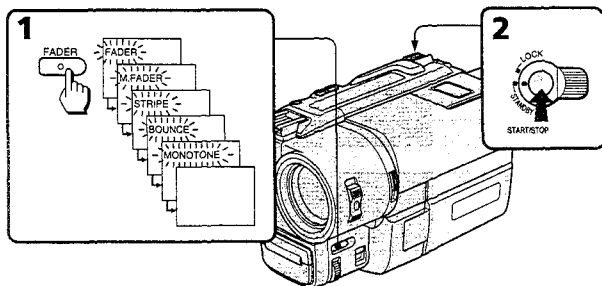
Using the fader function

When fading in [a]

- (1) While the camcorder is in Standby mode, press FADER until the desired fade indicator flashes.
- (2) Press START/STOP to start recording. The fade indicator stops flashing.

When fading out [b]

- (1) During recording, press FADER until the desired fade indicator flashes.
 - (2) Press START/STOP to stop recording. The fade indicator stops flashing, and then recording stops.
- The fading mode selected last is indicated first of all.



Note on the bounce function

When you use the following functions or D ZOOM is set to ON in the menu system, "BOUNCE" indicator does not appear.

- Wide mode
- Functions using the PICTURE EFFECT button
- Functions using the PROGRAM AE button

To cancel the fader function

Before pressing START/STOP, press FADER until the indicator disappears.

When the date or time indicator or title is displayed

The date or time indicator and title do not fade in or fade out.

When the START/STOP MODE switch is set to 5SEC or 1/2

You cannot use the fader function.

Note on the fader function

While using the bounce function, you cannot use the following functions.

- Exposure
- Focus
- Zoom

Shooting in the dark (NightShot)

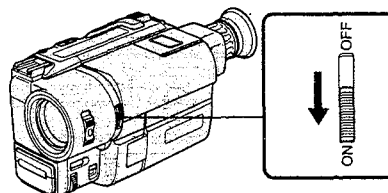
- CCD-TRV35/TRV65/TRV615 only

The NightShot function enables you to shoot a subject in a dark place. You can achieve a satisfactory recording of the ecology of nocturnal animals for observation with this function.

This function may record picture nearly in monochrome.



- (1) While the camcorder is in Standby mode, slide NIGHTSHOT to ON.
- (2) Press START/STOP to start recording. The "NIGHTSHOT" indicator flashes.



To cancel the NightShot function

Slide NIGHTSHOT to OFF.

Using the N.S.Light

When you set N.S.LIGHT to ON in the menu system, the picture will be more clear. The maximum limit of NightShot Light is about 10 feet (about 3 meters).

Notes on the NightShot

- When you keep setting NIGHTSHOT to ON in normal recording, picture may be recorded in incorrect/unnatural color.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.

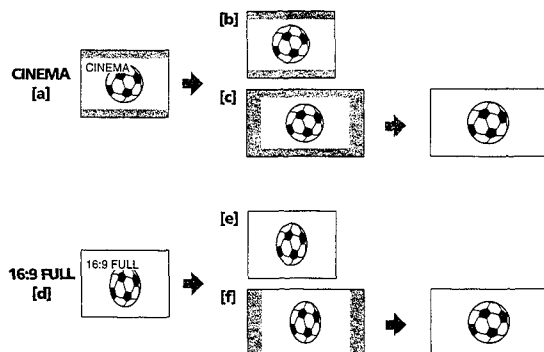
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Using the wide mode function

Selecting the desired mode

You can record a cinemalike picture (CINEMA) or a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9 FULL).



CINEMA

Black bands appear at the top and the bottom of the screen, and the viewfinder or LCD screen [a] and a normal TV screen [b] look wide. You can also watch the picture without black bands on a wide-screen TV [c].

16:9 FULL

The picture in the viewfinder or LCD screen [d] or on a normal TV [e] is horizontally compressed. You can watch the picture of normal images on a wide-screen TV [f].

Using the wide mode function

Using the wide mode function

You can select the wide mode (OFF, CINEMA, 16:9FULL) in the menu system (p. 29).

To cancel wide mode

Select OFF in the menu system.

To watch the tape recorded in wide mode

To watch the tape recorded in CINEMA mode, set the screen mode of the wide-screen TV to zoom mode. To watch the tape recorded in 16:9 FULL mode, set it to full mode. For details, refer to the instruction manual of your TV. Note that the picture recorded in 16:9 FULL mode looks compressed on a normal TV.

Notes on wide mode

- If wide mode is set to 16:9FULL, the Steady Shot function does not work and the "S" indicator flashes (CCD-TRV25/TRV35/TRV65/TRV215/TRV315/TRV615 only).
- In wide mode, you cannot select the bounce function with FADER (CCD-TRV35/TRV65/TRV615 only).
- When you record in 16:9 FULL mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.
- The wide mode is cancelled automatically 5 minutes after you remove the power source.
- When recording, you cannot change the mode.

Advanced operations

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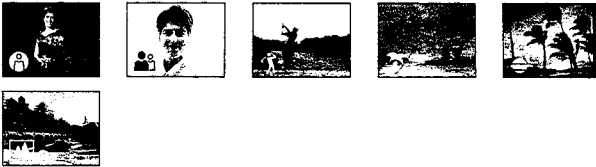
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Using the PROGRAM AE function

Selecting the best mode

You can select one of six PROGRAM AE (Auto Exposure) modes to suit your shooting situation, referring to the following.



● Spotlight mode

For subjects in spotlight, such as at the theater or a formal event.

■ Soft Portrait mode

For zooming in on a still subject in telephoto mode, or for a subject behind an obstacle such as a screen. Creates a soft background for subjects such as people or flowers, and faithfully reproduces skin color.

↑ Sports Lesson mode

For recording fast-moving subjects such as in tennis or golf games.

↔ Beach & Ski mode

For people or faces in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

☉ Sunset & Moon mode

For recording subjects in dark environments such as sunsets, fireworks, neon signs, or general night views.

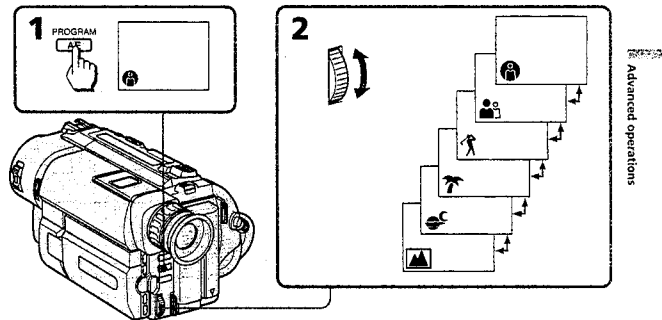
▣ Landscape mode

For distant subjects such as mountains or when recording a subject behind an obstacle such as a window or screen.

Using the PROGRAM AE function

Using the PROGRAM AE function

- (1) Press PROGRAM AE.
- (2) Turn the control dial to select the desired PROGRAM AE mode.



To turn off program AE

Press PROGRAM AE.

Notes on focus setting

- In the Spotlight, Sports lesson and Beach & Ski modes, you cannot take close-ups because the camcorder is set to focus only on subjects in the middle to far distance.
- In the Sunset & Moon and Landscape modes, the camcorder is set to focus only on distant subjects.

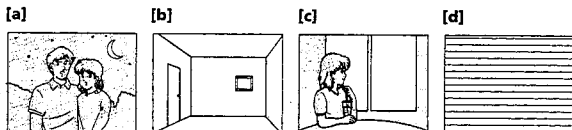
40

Focusing manually

– CCD-TRV35/TRV65/TRV615 only

When to use manual focus

In the following cases you should obtain better results by adjusting the focus manually.



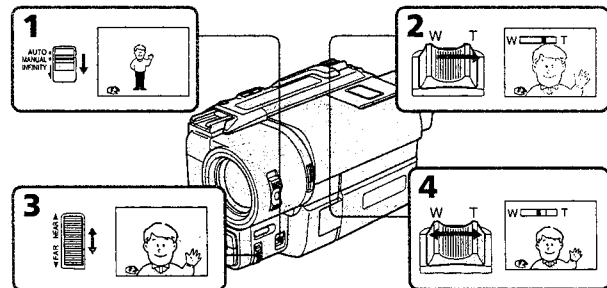
- Insufficient light [a]
- Subjects with little contrast - walls, sky, etc. [b]
- Too much brightness behind the subject [c]
- Horizontal stripes [d]
- Subjects through frosted glass
- Subjects beyond nets, etc.
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing manually

Focusing manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.

- (1) Set FOCUS to MANUAL. The indicator appears in the viewfinder or on the LCD screen.
- (2) Move the power zoom lever to the "T" side on the optical zoom zone until the lever reaches the end.
- (3) Turn the NEAR/FAR dial to achieve a sharp focus.
- (4) Set the desired shot length using the power zoom lever.



To return to autofocus mode

Set FOCUS to AUTO. The indicator in the viewfinder or on the LCD screen disappears.

Shooting in relatively dark places

Shoot at wide-angle after focusing in the telephoto position.

To record a very distant subject

Push FOCUS down to INFINITY. The lens focuses on the most distant subject while FOCUS is held down. When it is released, manual focus mode is resumed.

Use this function when shooting through a window or a screen, to focus on a most distant subject.

Note on manual focusing

The following indicators may appear:

- ▲ when recording a very distant subject.
- ▲ when the subject is too close to focus on.

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Enjoying picture effect

Selecting picture effect

You can make pictures like those of television with the Picture Effect function.



PASTEL [a]

The contrast of the picture is emphasized, and the picture looks like an animated cartoon.

NEG. ART [b]

The color and brightness of the picture is reversed.

SEPIA

The picture is sepia.

B&W

The picture is monochrome (black and white).

SOLARIZE [c]

The light intensity is more clear, and the picture looks like an illustration.

MOSAIC [d]

The picture is mosaic.

SLIM [e]

The picture expands vertically.

STRETCH [f]

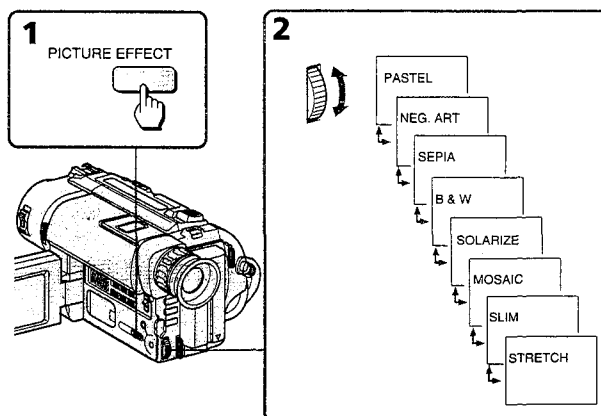
The picture expands horizontally.

Enjoying picture effect

Using picture effect function

(1) Press PICTURE EFFECT.

(2) Turn the control dial to select the desired picture effect mode.



To turn off picture effect

Press PICTURE EFFECT. The indicator in the viewfinder or on the LCD screen goes out.

Note on the picture effect

When you turn the power off, the camcorder returns automatically to normal mode.

Adjusting the exposure

– CCD-TRV35/TRV65/ TRV615 only

When to adjust the exposure

Adjust the exposure manually under the following cases.



[a]

- The background is too bright (back lighting)
- Insufficient light: most of the picture is dark

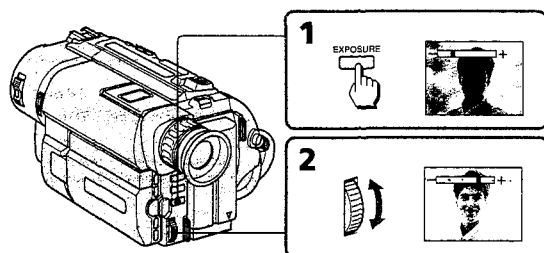
[b]

- Bright subject and dark background
- To record the darkness faithfully

Adjusting the exposure

(1) Press EXPOSURE.

(2) Turn the control dial to adjust the brightness.



To return to automatic exposure mode

Press EXPOSURE again.

Adjusting the exposure

Shooting with the sun behind you

If the light source is behind your subject, or in the following situations, the subject will be recorded too dark.

- The subject is indoors and there is a window behind the subject.
- Bright light sources are included in the scene.
- When shooting a person wearing white or shiny clothes in front of a white background, the face will be recorded too dark.

Shooting in the dark

We recommend you to use a video light (not supplied). To get the best color, you must maintain a sufficient light level.

When you adjust the exposure manually

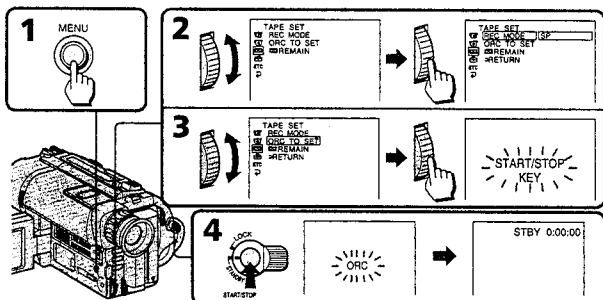
- BACK LIGHT does not work.
- If you change the PROGRAM AE mode, the camcorder automatically returns to automatic exposure mode.

Optimizing the recording condition

Use this feature to check the tape condition before recording, so that you can get the best possible picture (ORC).

- (1) While the camcorder is in Standby mode, press MENU to display the menu.
- (2) Turn the control dial to select **ORC TO SET**, then press the dial.
- (3) Turn the control dial to select **ORC TO SET**, then press the dial. "START/STOP KEY" flashes.
- (4) Press START/STOP.

The camcorder takes about 5 to 10 seconds to check the tape condition and then returns to Standby mode.



Each time you insert the cassette

Perform the above procedures.

Notes on the ORC function

- When you set ORC TO SET, the recording on the tape is erased for about 0.1 second so that the camcorder can check the tape condition. Be careful when you use a recorded tape. The 0.1 second blank is erased if you record from the point where you set ORC TO SET for more than 2 seconds, or if you record over the blank.
- You cannot use this function on a tape with the red mark on the cassette exposed.

Releasing the STEADY SHOT function

– CCD-TRV25/TRV35/TRV65/TRV215/TRV615 only

When the Steady Shot function is working, the camcorder compensates for camera-shake.

You can release the Steady Shot function when you do not need to use the Steady Shot function. The "SS" indicator appear in the viewfinder or on the LCD screen. Do not use the Steady Shot function when shooting a stationary object with a tripod. You can select ON or OFF in the menu system (p. 29).

To activate the Steady Shot function again

Set STEADYSHOT to ON in the menu system.

Notes on the Steady Shot function

- The Steady Shot function will not correct excessive camera-shake.
- When you set STEADYSHOT ON or OFF in the menu system, the exposure may fluctuate.
- Steady Shot does not operate in 16:9 FULL mode. If you set STEADYSHOT to ON in the menu system, the "SS" indicator flashes.

Advanced operations

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Watching on a TV screen

Connect the camcorder to your TV or VCR to watch the playback picture on the TV screen. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use house current for the power source.

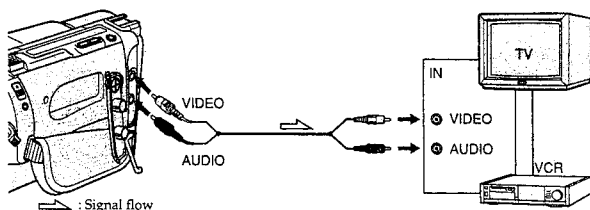
While playing back on a TV screen, close the LCD panel. Otherwise, picture distortion may occur.

Connecting directly to a TV/VCR with Video/Audio input jacks

When connecting the A/V connecting cable, make sure you connect the plug to jacks of the same color.

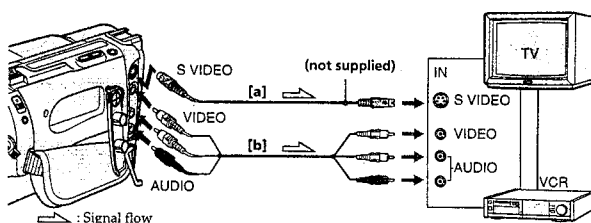
Open the jack cover. With using the supplied A/V connecting cable, connect the camcorder to the LINE IN inputs on the TV or VCR connected to the TV. Set the TV/VCR selector on the TV to VCR. When connecting to the VCR, set the input selector on the VCR to LINE.

CCD-TRV15/TRV25/TRV35/TRV215



Watching on a TV screen

CCD-TRV65/TRV615



– CCD-TRV65/TRV615 only

If your TV or VCR has an S video jack, connect using the S video cable (not supplied) [a] to obtain a high quality picture. If you are going to connect the camcorder using the S video cable (not supplied) [a], you do not need to connect the yellow (video) plug of the A/V connecting cable [b].

If your TV or VCR is a monaural type

– CCD-TRV65/TRV615 only

Connect only the white plug for audio on both the camcorder and the TV or the VCR. With this connection, the sound is monaural even in stereo model.

To connect to a TV or VCR without Video/Audio input jacks
Use an RFU-95UC RFU adaptor (not supplied).

Advanced operations

Watching on a TV screen

Using the AV cordless IR receiver

—CCD-TRV35/TRV65/TRV615 only

Once you connect the AV cordless IR receiver (not supplied) having the LASER LINK mark to your TV or VCR, you can easily view the picture on your TV. For details, refer to the operating instructions of the AV cordless IR receiver. LASER LINK is a system which transmits and receives a picture and sound between video equipment having the mark by using infrared rays. LASER LINK is a trademark of Sony Corporation.

To play back on a TV

- (1) After connecting your TV and AV cordless IR receiver, set the POWER switch on the AV cordless IR receiver to ON.
- (2) Set the POWER switch on the camcorder to VTR/PLAYER.
- (3) Turn the TV on and set the TV/VCR selector on the TV to VCR.
- (4) Press LASER LINK. The lamp of the LASER LINK button lights up.
- (5) Press on the camcorder to start playback.
- (6) Point the LASER LINK emitter at the AV cordless IR receiver.

To cancel the LASER LINK function

Press LASER LINK.

If you use a Sony TV

- You can turn on the TV automatically when you press the LASER LINK or button. To do so, set the AUTO TV ON to ON in the menu system and turn the TV's main switch on, then do either of the following:
 - Point the LASER LINK emitter towards the TV's remote sensor and press LASER LINK.
 - Turn on the LASER LINK button and press .
- You can switch the video input of the TV automatically to the one which the AV cordless IR receiver is connected. To do so, set the AUTO TV ON to ON and the TV INPUT to the same video input (1,2,3) in the menu system. With some models, however the picture and sound may be disconnected momentarily when the video input is switched.
- The above feature may not work with some TV models.

Note

When LASER LINK is activated (the LASER LINK button is lit), the camcorder consumes power. Press and turn off the LASER LINK button when it is not needed.

Editing onto another tape

You can create your own video program by editing with any other 8 mm, Hi8, VHS, S-VHS, VHS-C, S-VHS-C, Betamax or ED Betamax VCR that has video/audio inputs.

Before editing

Connect the camcorder to the VCR using the supplied A/V connecting cable. Set the input selector on the VCR to LINE, if available. Set EDIT to ON in the menu system (p. 29).

Starting editing

Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.

- (1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert your recorded tape into the camcorder.
- (2) Play back the recorded tape on the camcorder until you locate the point just before where you want to start editing, then press to set the camcorder in playback pause mode.
- (3) On the VCR, locate the recording start point and set the VCR in recording pause mode.
- (4) First press on the camcorder, and after a few seconds press on the VCR to start editing.

To edit more scenes

Repeat steps 2 to 4.

To superimpose the title while you are editing

You can superimpose the title while you are editing. Refer to "Superimposing a title" (p. 48).

To stop editing

Press on both the camcorder and the VCR.

Note on Fine Synchro Edit

If you connect a video deck that has the Fine Synchro Edit feature to the LANC jack of the camcorder, using a LANC cable (not supplied), the edit will be even more precise.

Advanced operations

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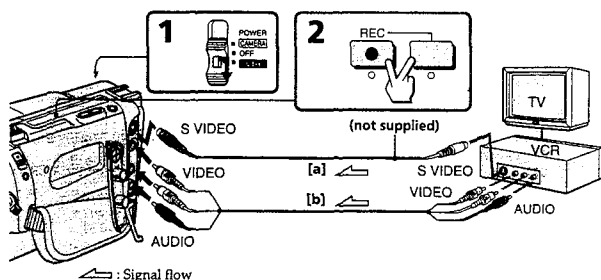
Recording from a VCR or TV

—CCD-TRV65/TRV615 only

You can record a tape from another VCR or a TV program from a TV that has video/audio outputs. Connect the camcorder to the VCR or TV using the supplied A/V cable. Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.

- (1) While pressing the small green button on the POWER switch, set it to VTR.
- (2) Set DISPLAY to LCD in the menu system. Then press REC and the button on the right together on the camcorder at the point where you want to start recording.

In recording and recording pause mode, S video and VIDEO/AUDIO jacks automatically work as input jacks.



If your VCR or TV has an S video jack, connect using the S video cable (not supplied) [a] to obtain a high quality picture.

If your VCR or TV is a monaural type, connect only the white plug for audio on both the camcorder and the VCR or TV.

If your VCR or TV does not have an S VIDEO OUT jack, connect cable [b]. Do not connect the S video cable (not supplied) [a] to the camcorder.

To stop recording

Press .

Note on recording

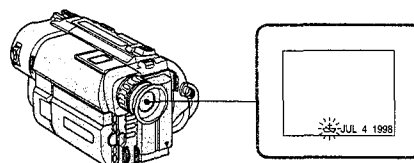
You cannot record a picture that has a copyright control signal for copyright protection of software. "COPY INHIBIT" appears if you try to record such a picture.

Additional information

Changing the lithium battery in the camcorder

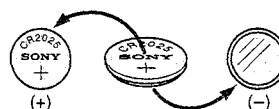
Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion. Discard used batteries according to the manufacturer's instructions.

The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)



Notes on lithium battery

- Keep the lithium battery out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Note that the lithium battery has a positive (+) and a negative (-) terminals as illustrated. Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.



WARNING

The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Additional information

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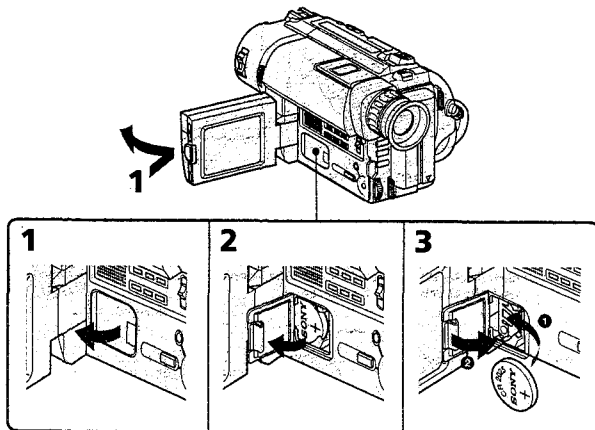
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Changing the lithium battery in the camcorder

Changing the lithium battery

When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date, time and other items in the menu system retained by the lithium battery.

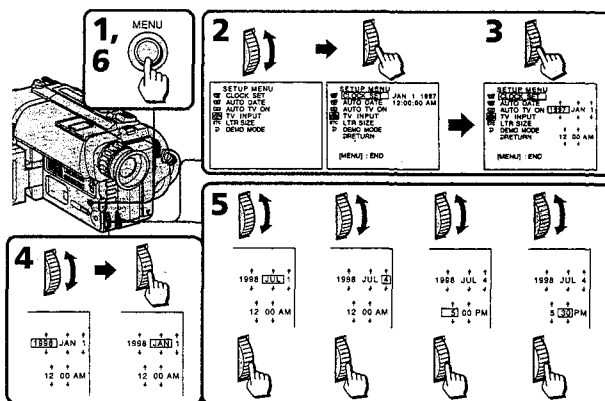
- (1) Open the LCD panel and open the lid of the lithium battery compartment.
- (2) Push the lithium battery down once and pull it out from the holder.
- (3) Install the lithium battery with the positive (+) side facing out. Close the lid.



Resetting the date and time

You can reset the date and time in the menu system.

- (1) While the camcorder is in Standby mode, press MENU to display the menu.
- (2) Turn the control dial to select **DATE**, then press the dial.
- (3) Turn the control dial to select **CLOCK SET**, then press the dial.
- (4) Turn the control dial to adjust the desired year, then press the dial.
- (5) Set the month, day, hour and minute by turning the control dial and pressing the dial.
- (6) Press MENU to erase the menu display.



Additional Information

To correct the date and time setting

Repeat the above procedure.

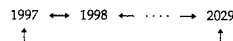
To check the preset date and time

Press DATE to display the date indicator.

Press TIME to display the time indicator.

When you press the same button again, the indicator goes off.

The year changes as follows:



Note on the time indicator

The internal clock of this camcorder operates on a 12-hour cycle.

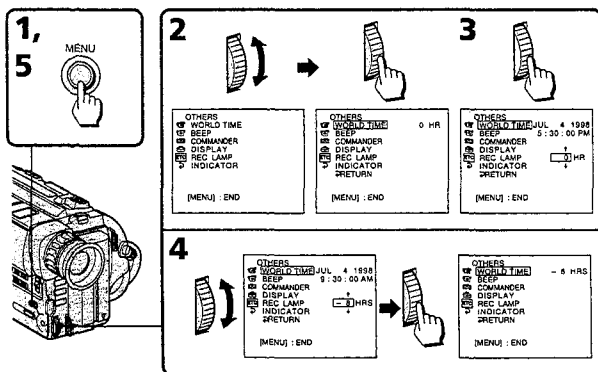
- 12:00 AM stands for midnight.
- 12:00 PM stands for noon.

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Simple setting of clock by time difference

You can easily set the clock for a local time by a time difference in the menu system.

- (1) While the camcorder is the standby mode, press MENU to display the menu.
- (2) Turn the control dial to select **ETC**, then press the dial.
- (3) Turn the control dial to select **WORLD TIME**, then press the dial.
- (4) Turn the control dial to set a time difference, and press the dial. The hour of clock changes in relation to a time difference which you set.
- (5) Press MENU to erase the menu display.



Note on WORLD TIME

If the time is not set, WORLD TIME does not work.

Usable cassettes and playback modes

Selecting cassette types

- CCD-TRV65/TRV615 only

This Hi8 system is an extension of the standard 8 mm system, and was developed to realize higher picture quality.

You can use either Hi8 or standard 8 mm video cassette for this camera. When you use a Hi8 video cassette, the recording is made in the Hi8 system. When you use a standard 8 mm video cassette, the recording is made in the standard 8 mm system. Standard 8 mm video cassette is incapable of recording in the Hi8 system.

If you intend to use a standard 8 mm video recorder/player to play back a video tape, you are required to use a standard 8 mm video cassette for recording.

What is video 8 XR/video Hi8 XR

"XR", that is an abbreviation of "Extended Resolution", represents the new type of 8 mm camcorder that has the property to realize more quality picture compared with the conventional camcorders including the Hi8 models. You can record and play back pictures more clearly in detail with the "XR" camcorder.

Video tape recorded by a camcorder having the "XR" function shows excellent picture quality at maximum when it is played back by the "XR" camcorder.

When video tape recorded by this "XR" camcorder is played back by a conventional 8/Hi8 camcorder or when video tape recorded by a conventional 8/Hi8 camcorder is played back by this "XR" camcorder, the playback picture quality is in the normal quality of the 8/Hi8 camcorder.

Additional Information

When you play back

The playback mode (SP/LP) and system (Hi8/standard 8 mm) are selected automatically according to the format in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Note on AFM HiFi stereo

- CCD-TRV65/TRV615 only

When you play back a tape, the sound will be in monaural if:

- You record the tape using this camcorder, then play it back on an AFM HiFi monaural video recorder/player.
- You record the tape on an AFM HiFi monaural video recorder, then play it back on this camcorder.

Foreign 8 mm video

Because the TV color systems differ from country to country, you may not be able to play back foreign pre-recorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

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Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in a cold environment

Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in a cold environment.

To save battery power

Turn **STANDBY** down when not recording to save battery power. A smooth transition between scenes can be made even if recording is stopped and started again. While you are positioning the subject, selecting an angle, or looking through the viewfinder lens or on the LCD screen, the lens moves automatically and the battery is used. The battery is also used when a tape is inserted or removed.

When to replace the battery pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up. Remaining time in minutes appears.



When the remaining battery indicator reaches the lowest point, the indicator may appear and start flashing in the viewfinder or on the LCD screen. When the indicator changes from slow flashing to rapid flashing while you are recording, set the **POWER** switch to **OFF** on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain a smooth transition between scenes after the battery pack has been replaced.

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Tips for using the battery pack

Notes on the "InfoLITHIUM" battery pack

What is "InfoLITHIUM"

The "InfoLITHIUM" is a lithium ion battery pack which can exchange data with compatible video equipment about its battery consumption. Sony recommends that you use the "InfoLITHIUM" battery pack with video equipment having the mark.

When you use this battery pack with video equipment having the , the video equipment will indicate the remaining battery time in minutes*. However, if you use it with video equipment not having this mark, the remaining battery capacity will not be indicated in minutes.

* "InfoLITHIUM" is a trademark of Sony Corporation.

* The indication may not be accurate depending on the condition and environment which the equipment is used under.

How the battery consumption is displayed

The power consumption of the camcorder changes depending on its use, such as how the autofocus is working.

While checking the condition of the camcorder, the "InfoLITHIUM" battery pack measures the battery consumption and calculates the remaining battery power. If the condition changed drastically, the remaining battery indication may suddenly decrease or increase by more than 2 minutes.

Even if 5 to 10 minutes is indicated as the battery remaining time on the LCD screen or in the viewfinder, the indicator may also flash under some condition.

To obtain more accurate remaining battery indication

Set the camcorder to recording standby mode and point towards a stationary object. Do not move the camcorder for 30 seconds or more.

- If the indication seems incorrect, recharge the battery pack fully (Full charge¹⁾). Note that if you have used the battery in a hot or cold environment for long time, or you have repeated charging many times, the battery pack may not be able to show the correct time even after being fully charged.
- After you have used the "InfoLITHIUM" battery pack with an equipment not having the , make sure that you use up the battery pack on the equipment having the and then recharge fully.

Why the remaining battery indication does not match the continuous recording time in the operating instructions

The recording time is affected by the environmental temperature and conditions. The recording time becomes very short in a cold environment. The continuous recording time in the operating instructions is measured under the condition of using a fully charged (or normal charged) battery pack in 77°F (25°C). As the environmental temperature and condition are different when you actually use the camcorder, the remaining battery time is not same as the continuous recording time in the operating instructions.

¹⁾ Full charge: Charging until FULL appears in the display window.

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Tips for using the battery pack

Notes on the rechargeable battery pack

Caution

Never leave the battery pack in temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.

The battery pack heats up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Be sure to observe the following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

The life of the battery pack

If the battery indicator flashes rapidly just after turning on the camcorder with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Additional Information

Maintenance information and precautions

Notes on the battery case

– CCD-TRV15/TRV25/TRV35/TRV65 only

- Use only with alkaline batteries. You cannot use the battery case with manganese batteries or size AA (LR6) rechargeable NiCd batteries.
- Using with Sony alkaline batteries is preferable.
- Battery life is remarkably shorter in a cold environment (lower than 50°F/10°C).
- Keep the metal part clean. If it gets dirty, wipe it with a soft cloth.
- Do not disassemble or convert the battery case.
- Do not expose the battery case to any mechanical shock.
- During recording, the battery case heats up. This is not cause for concern.
- Prevent the electrode in the battery case from coming in contact with a metal object.
- If you will not use the battery case for a long time, detach the battery case from the camcorder and remove the batteries from the battery case.

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please, take the following precautions.

Inside the camcorder

If there is moisture inside the camcorder, the beep sounds and the indicator flashes. If this happens, none of the functions except cassette ejection will work. Open the cassette compartment, turn off the camcorder, and leave it about 1 hour. When indicator flashes at the same time, the cassette is inserted in the camcorder. Eject the cassette, turn off the camcorder, and leave also the cassette about 1 hour. The camcorder can be used again if the indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

- (1) Be sure to tightly seal the plastic bag containing the camcorder.
- (2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Additional Information

Maintenance information and precautions

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When the  indicator and "CLEANING CASSETTE" message appear one after another or playback pictures are "noisy" or hardly visible, the video heads may be dirty.



[a] Slightly dirty
[b] Very dirty

If this happens, clean the video heads with the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). After checking the picture, if it is still "noisy," repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

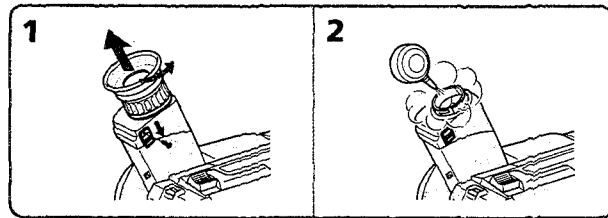
Note

If the Sony V8-25CLH/V8-25CLD cleaning cassette is not available in your area, consult your nearest Sony dealer.

Maintenance information and precautions

Removing dust from inside the viewfinder

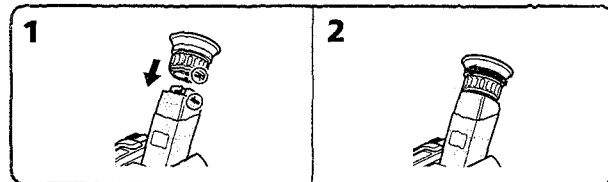
- (1) Remove the screw with a screwdriver (not supplied). Then, while sliding the RELEASE knob, turn the eyecup in the direction of the arrow and pull it out.
- (2) Clean the surface with a commercially available blower.



Additional information

To reattach the eyecup

- (1) Align the groove on the eyecup with the • mark on the barrel.
- (2) Turn the eyecup in the direction of the arrow. Then replace the screw.



Caution

Do not remove any other screws. You may remove only the screw to remove the eyecup.

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Maintenance information and precautions

Precautions

Camcorder operation

- Operate the camcorder on 7.2 V (battery pack) or 8.4 V (AC power adaptor).
- For DC or AC operation, use the accessories recommended in this manual.
- Should any solid object or liquid get inside the casing, unplug the camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch setting to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape and if the recording tab is in or out.

Camcorder care

- When the camcorder is not to be used for a long time, remove the tape. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- If fingerprints or debris make the LCD screen dirty, we recommend using a LCD Cleaning Kit (not supplied) to clean the LCD screen.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on it, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction, and sometimes this malfunction cannot be repaired.

Maintenance information and precautions

AC power adaptor

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
 - Extremely hot or cold
 - Dusty or dirty
 - Very humid
 - Vibrating

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following.

- Be sure to insert the batteries in the correct direction.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- The batteries slowly discharge while not in use.
- Do not use a battery that is leaking.

If battery leakage occurred

- Wipe off the liquid in the battery case carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

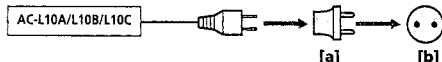
Additional information

Using your camcorder abroad

Each country or area has its own electric and TV color systems. Before using your camcorder abroad, check the following points.

Power sources

You can use your camcorder in any country or area with the supplied AC power adaptor within 100 V to 240 V AC, 50/60 Hz. Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



Difference in color systems

This camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV. Check the following list.

NTSC system

Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system

Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system

Brazil

PAL-N system

Argentina, Paraguay, Uruguay

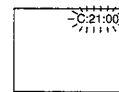
SECAM system

Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Self-diagnosis display

The camcorder has a self-diagnosis display. This function displays the camcorder's condition with five digits (a combination of a letter and figures) in the viewfinder or on the LCD screen. If this occurs, check the following code chart. The five-digit display informs you of the camcorder's current condition. The last two digits (indicated by □□) will differ depending on the state of the camcorder.

LCD screen



Self-diagnosis display

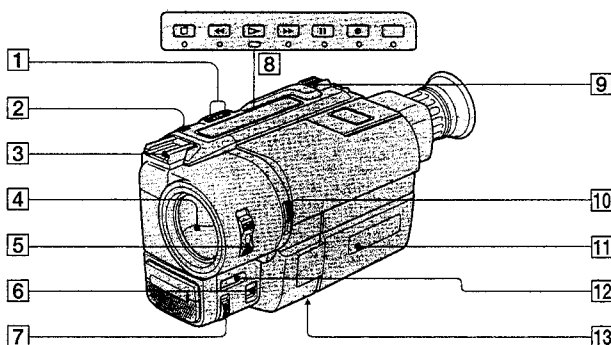
- C:□□□□
You can service the camcorder yourself.
- E:□□□□
Contact your Sony dealer or local authorized Sony facility.

Five-digit display	Cause and/or Corrective Actions
C:21:□□	- Moisture condensation has occurred. - Remove the cassette and leave the camcorder for at least 1 hour. (p. 67)
C:22:□□	- The video heads are dirty. - Clean the heads using the Sony V8-25CLH/V8-25CLD cleaning cassette (not supplied). (p. 68)
C:23:□□	- You are using a battery pack that is not an "InfoLITHIUM" battery pack. - Use an "InfoLITHIUM" battery pack. (p. 66)
C:31:□□ C:32:□□	- A servicable situation not malfunctioned above has occurred. - Remove the cassette and insert it again, then operate the camcorder. - Disconnect the power cord of the AC power adaptor or remove the battery pack. After reconnecting the power source, operate the camcorder.
E:61:□□ E:62:□□	- A camcorder malfunction which you cannot service has occurred. - Contact your Sony dealer or local authorized Sony service facility and inform them of the five digits. (example: E:61:10)

If you are unable to resolve the problem, contact your Sony dealer or local authorized Sony service facility.

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Identifying the parts

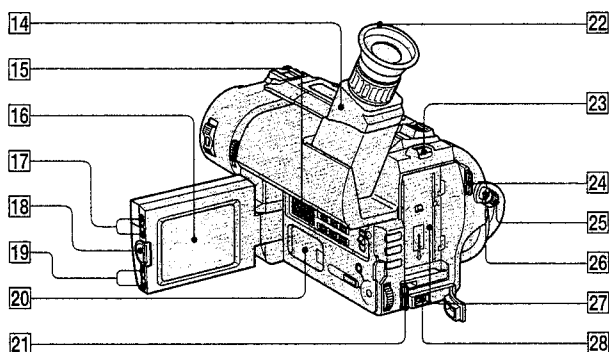


Additional information

- 1 EDIT/SEARCH button (p. 21)
- 2 LASER LINK button (CCD-TRV35/TRV65/TRV615 only) (p. 56)
- 3 Intelligent accessory shoe (CCD-TRV65/TRV615 only) (p. 80) / Accessory shoe (CCD-TRV35 only)
- 4 Lens cover
- 5 POWER switch (p. 13)
- 6 FOCUS switch (CCD-TRV35/TRV65/TRV615 only) (p. 43)
- 7 NEAR/FAR dial (CCD-TRV35/TRV65/TRV615 only) (p. 43)
- 8 Video control buttons (p. 22)
 - STOP (stop)
 - ◀ REW (rewind)
 - ▶ PLAY (playback)
 - ▶▶ FF (fastforward)
 - || PAUSE (pause)
 - REC (recording) (CCD-TRV65/TRV615 only)
- 9 Power zoom lever (p. 15)
- 10 NIGHTSHOT switch (CCD-TRV35/TRV65/TRV615 only) (p. 37)
- 11 Display window (p. 86)
- 12 FADER button (CCD-TRV35/TRV65/TRV615 only) (p. 36)
- 13 Tripod receptacle (p. 20)
 - Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm) otherwise, you cannot attach the tripod securely and the screw may damage the camcorder.

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Identifying the parts



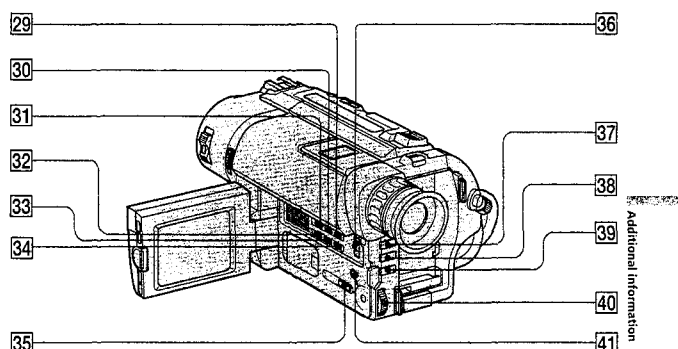
- 14 Viewfinder (p. 14)
- 15 Speaker (p. 23)
- 16 LCD screen (p. 17)
- 17 LCD BRIGHT buttons (p. 17)
- 18 OPEN button (p. 16)
- 19 VOLUME buttons (p. 22)
- 20 Lithium battery compartment (p. 60)
- 21 Hook for shoulder strap (p. 85)
- 22 Eyecup
- 23 BATT RELEASE lever (p. 7, 11)
- 24 Hook for shoulder strap (p. 85)
- 25 STANDBY switch (p. 13)
- 26 START/STOP button (p. 13)
- 27 Battery mounting surface
- 28 DC IN jack (p. 8, 26)

Note on the intelligent accessory shoe

—CCD-TRV65/TRV615 only
Supplies power to optional accessories such as a video light or microphone. The intelligent accessory shoe is linked to the STANDBY switch, allowing you to turn on and off the power supplied by the shoe. Refer to the instruction manual of the accessory for further information. To connect an accessory, press down and push it to the end, and then tighten the screw. To remove an accessory, loosen the screw, and then press down and pull out the accessory.

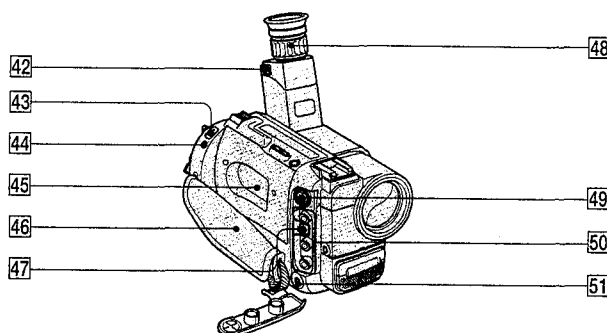
If the camcorder does not work correctly with using the AC power adaptor, use the battery pack.

Identifying the parts



- | | |
|----------------------------------|--|
| 29 COUNTER RESET button (p. 14) | 36 START/STOP MODE switch (p. 16) |
| 30 TIME button (p. 51) | 37 BACK LIGHT button (p. 34) |
| 31 DATE button (p. 51) | 38 PROGRAM AE button (p. 41) |
| 32 DISPLAY button (p. 23) | 39 EXPOSURE button (CCD-TRV35/ TRV65/ TRV615 only) (p. 46) |
| 33 TITLE button (p. 48) | 40 Control dial (p. 29) |
| 34 END SEARCH button (p. 25) | 41 MENU button (p. 29) |
| 35 PICTURE EFFECT button (p. 45) | |

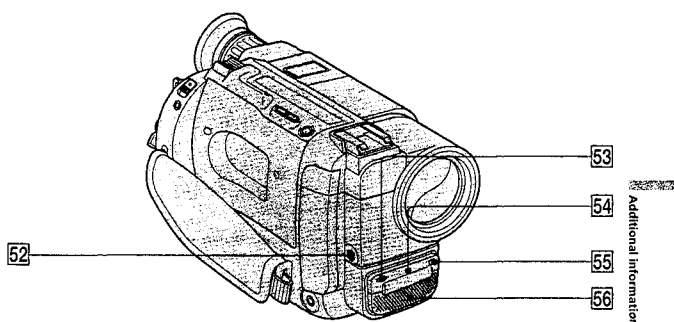
Identifying the parts



- | | |
|--|--|
| 42 Eyecup RELEASE knob (p. 69) | 47 RFU DC OUT (RFU adaptor DC output) jack (p. 55) |
| 43 EJECT switch (p. 12) | 48 Viewfinder lens adjustment ring (p. 14) |
| 44 LANC ⚡ control jack
⚡ stands for Local Application Control Bus System. The ⚡ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE. | 49 S VIDEO jack (CCD-TRV65/TRV615 only) (p. 55) |
| 45 | 50 VIDEO/AUDIO jacks (p. 54) |
| 46 | 51 ⏏ (headphones) jack (CCD-TRV65/ TRV615 only) (p. 23) / 🎧 (earphone) jack (CCD-TRV15/ TRV25/ TRV35/ TRV215 (p. 23) |
| 48 Cassette compartment (p. 12) | |
| 49 Grip strap (p. 19) | |

81 82

Identifying the parts



- | | |
|--|---|
| 52 MIC jack (PLUG IN POWER)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone. | 55 Remote sensor (p. 84)
Aim the Remote Commander here for remote control. |
| 53 Camera recording/battery lamp (p. 13) | 56 Microphone |
| 54 LASER LINK emitter (CCD-TRV35/ TRV65/ TRV615 only) (p. 56) | |

To watch the demonstration

You can start the demonstration by setting DEMO MODE in the menu system. You can also start the demonstration by the following operation. When NIGHTSHOT is set to ON, you cannot watch the demonstration (CCD-TRV35/ TRV65/ TRV615 only).

To enter demo mode

- (1) Eject the cassette and set the POWER switch to VTR/PLAYER.
- (2) Turn STANDBY up to STANDBY.
- (3) While holding down ► set the POWER switch to CAMERA.

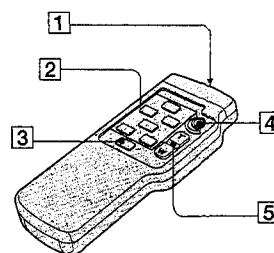
To exit demo mode

- (1) Set the POWER switch to VTR/PLAYER.
- (2) Turn STANDBY up to STANDBY.
- (3) While holding down ■ set the POWER switch to CAMERA.

Identifying the parts

Remote Commander

The buttons that have the same name on the Remote Commander as on the camcorder function identically.



- | | |
|--|-----------------------------|
| 1 Transmitter
Point toward the remote sensor to control the camcorder after turning on the camcorder. | 3 DISPLAY button (p. 23) |
| 2 Video control buttons (p. 22) | 4 START/STOP button (p. 13) |
| | 5 Power zoom button (p. 15) |

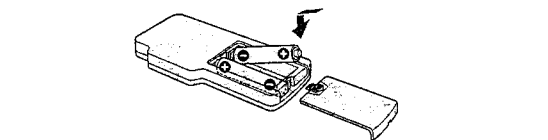
Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works in commander mode VTR 2. The commander modes (1, 2 and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

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Identifying the parts

To prepare the Remote Commander
Insert two size AA (R6) batteries by matching the + and - on the batteries to the diagram inside the battery compartment.



Note on battery life

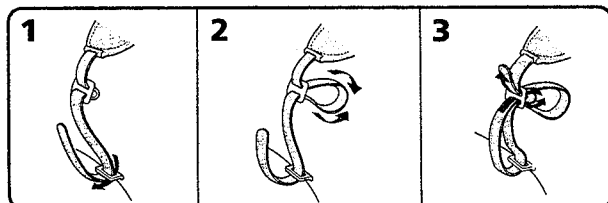
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage

Remove the batteries when you will not use the Remote Commander for a long time.

Attaching the shoulder strap

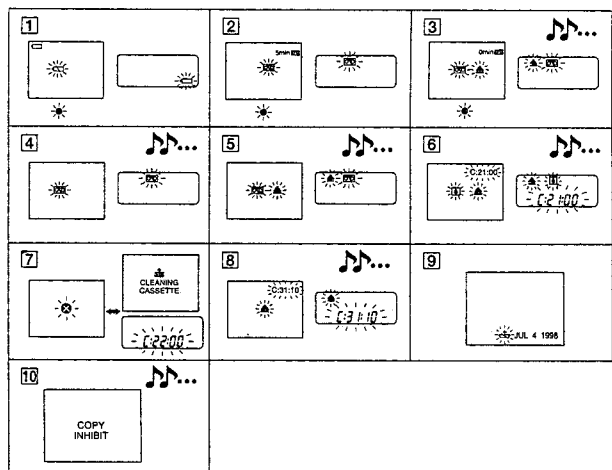
Attach the supplied shoulder strap to the hooks for the shoulder strap .



Warning indicators

If indicators flash in the viewfinder or in the display window, check the following:

- **BEEP** : you can hear the beep sound when the BEEP is set to ON.



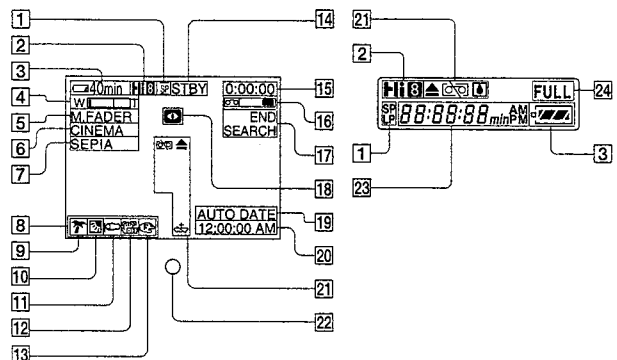
- | | |
|---|--|
| 1 The battery is weak or dead.
Slow flashing: The battery is weak.
Fast flashing: The battery is dead. | 7 The video heads may be contaminated. |
| 2 The tape is near the end.
The flashing is slow. | 8 Some other trouble has occurred.
Use the self-diagnosis function (p. 76).
If the display does not disappear contact your Sony dealer or local authorized Sony service facility. |
| 3 The tape has run out.
The flashing becomes rapid. | 9 The lithium battery is weak or is not installed. |
| 4 No tape has been inserted. | 10 You tried to record a picture that has a copyright control signal.
(CCD-TRV65/TRV615 only) (P. 58) |
| 5 The tab on the tape is out (red). | |
| 6 Moisture condensation has occurred. | |

Identifying the parts

Operation indicators

Viewfinder **Display window**

Display window



- 1 **Recording mode indicator** (p. 30)/
Mirror mode indicator (p. 18)
 - 2 **Playing back or recording in Hi8
format** (CCD-TRV65/TRV615 only)
(p. 63)
 - 3 **Remaining battery time indicator**

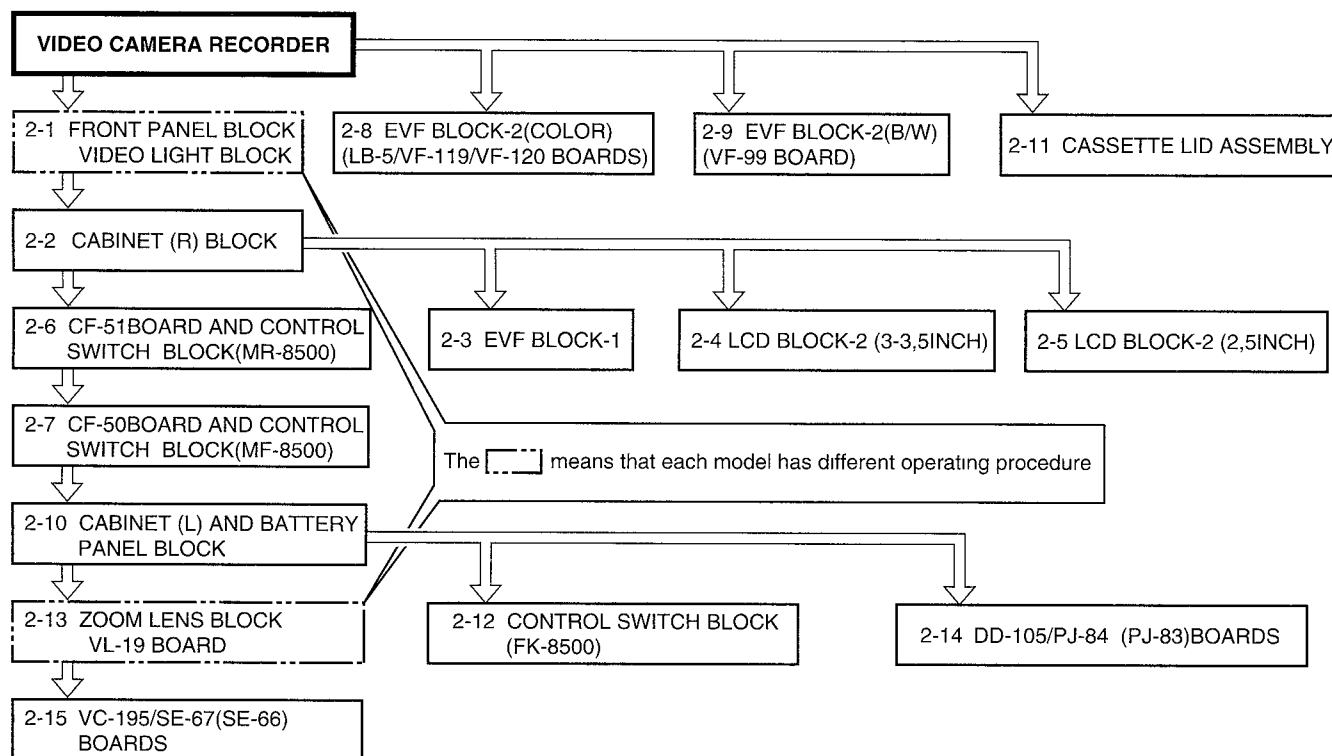
 - 4 **Exposure indicator** (CCD-TRV35/
TRV65/TRV615 only) (p. 46)/
Zoom indicator (p. 15)
 - 5 **FADER indicator** (CCD-TRV35/TRV65/
TRV615 only) (p. 36)
 - 6 **Wide mode indicator** (p. 39)
 - 7 **PICTURE EFFECT indicator** (p. 45)
 - 8 **LCD BRIGHT indicator** (p. 17)/
VOLUME indicator (p. 22)
 - 9 **PROGRAM AE indicator** (p. 40)
 - 10 **Backlight indicator** (p. 34)
 - 11 **WIND indicator** (CCD-TRV65/TRV615
only) (p. 31)
 - 12 **Steady Shot off indicator**
(CCD-TRV25/TRV35/TRV65/TRV215/
TRV615 only) (p. 53)
 - 13 **Manual focusing** (CCD-TRV35/
TRV65/TRV615 only) (p. 43)
 - 14 **Video counter** (p. 13)
 - 15 **Tape counter** (p. 14)/**Self-diagnosis
functions indicator** (p. 76)/**5SEC mode
indicator** (p. 16)
 - 16 **Remaining tape indicator**

 - 17 **END SEARCH indicator** (p. 25)
 - 18 **NIGHTSHOT indicator** (CCD-TRV35/
TRV65/TRV615 only) (p. 37)
 - 19 **AUTO DATE indicator** (p. 13)/**Date
indicator** (p. 51)
 - 20 **Time indicator** (p. 51)
 - 21 **Warning indicators** (p. 87)
 - 22 **Recording lamp** (p. 13)
 - 23 **Date or time indicator** (p. 51)/**Tape
counter indicator** (p. 14)/**Self-diagnosis
functions indicator** (p. 76)/**Remaining
battery time indicator**
 - 24 **FULL charge indicator** (p. 8)

CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/ TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

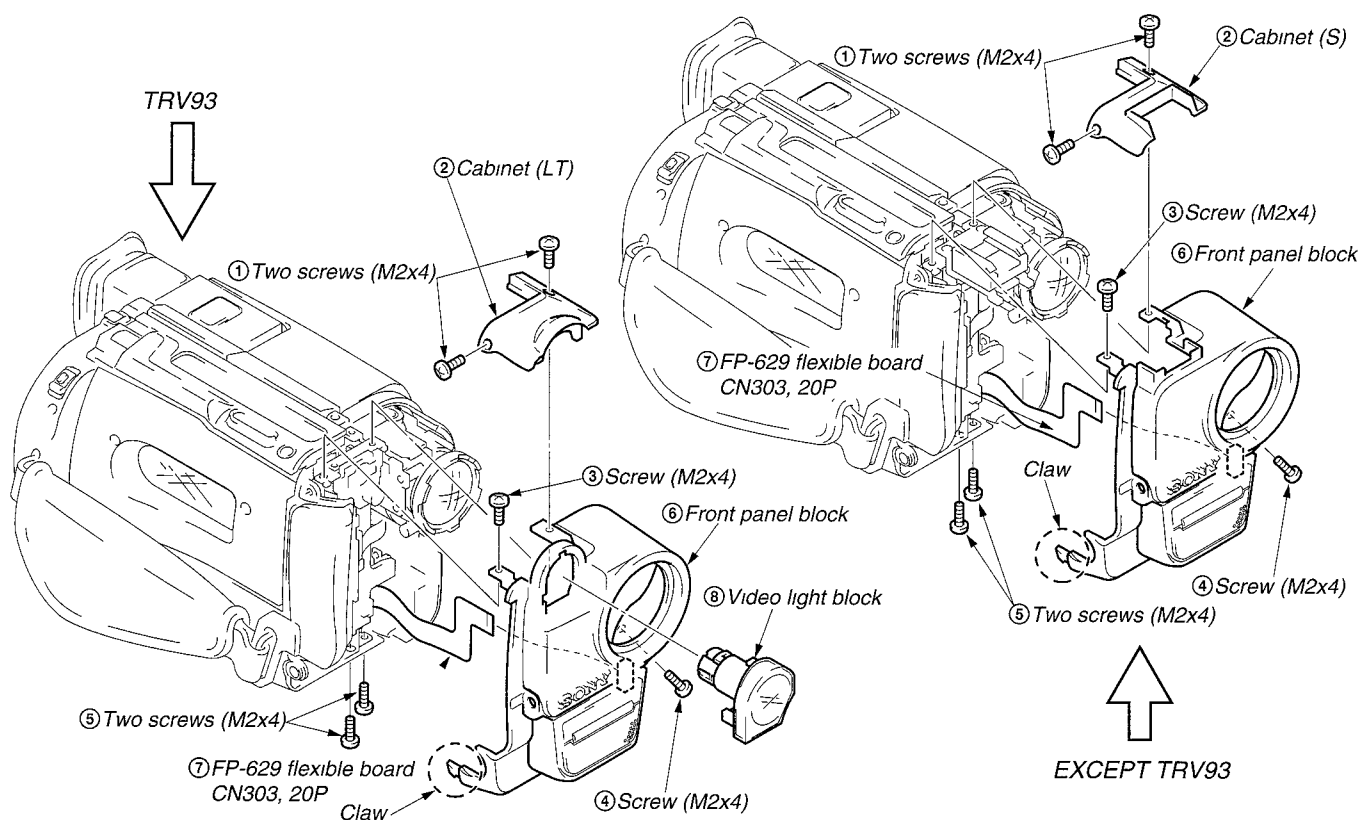
SECTION 2 DISASSEMBLY

The equipment can be removed using the following procedure

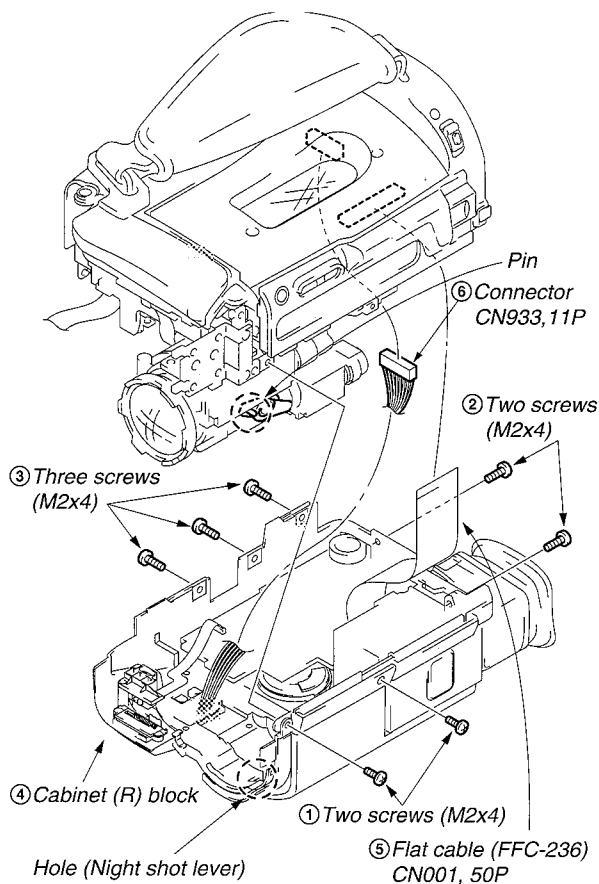


NOTE : Follow the disassembly procedure in the numerical order given

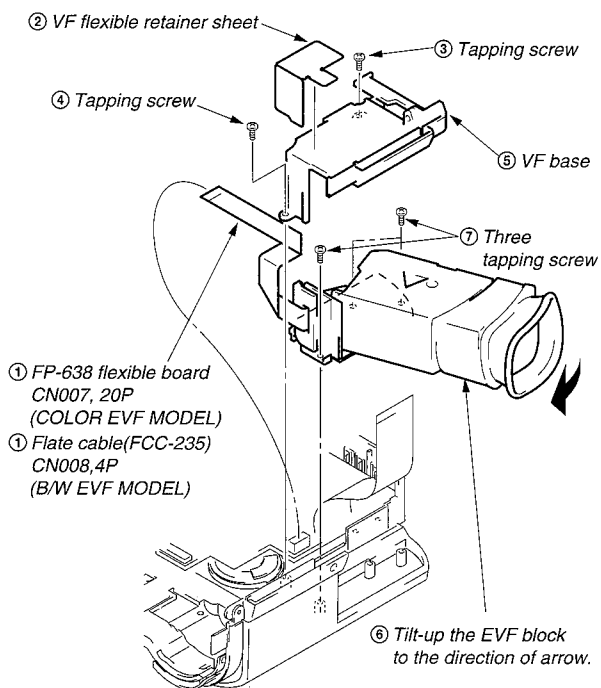
2-1. REMOVAL OF FRONT PANEL BLOCK AND VIDEO LIGHT BLOCK



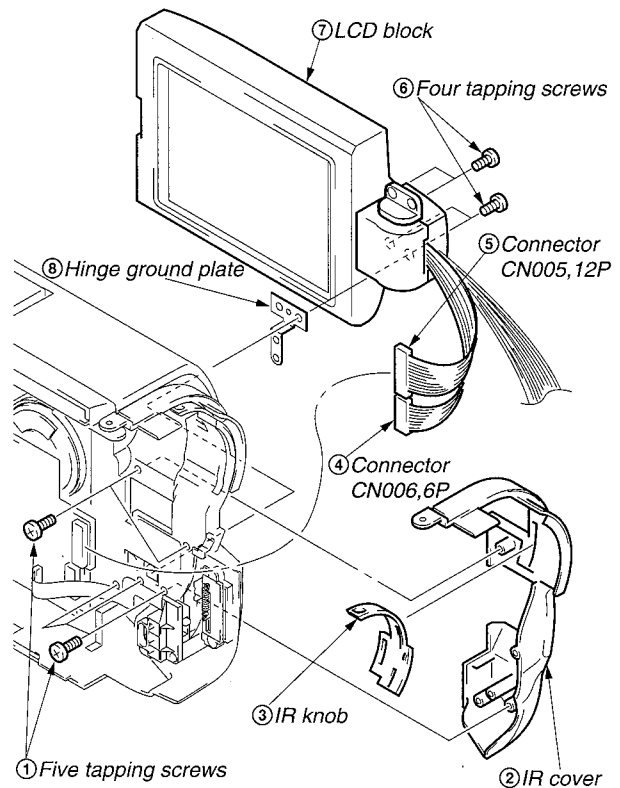
2-2. REMOVAL OF CABINET (R) BLOCK



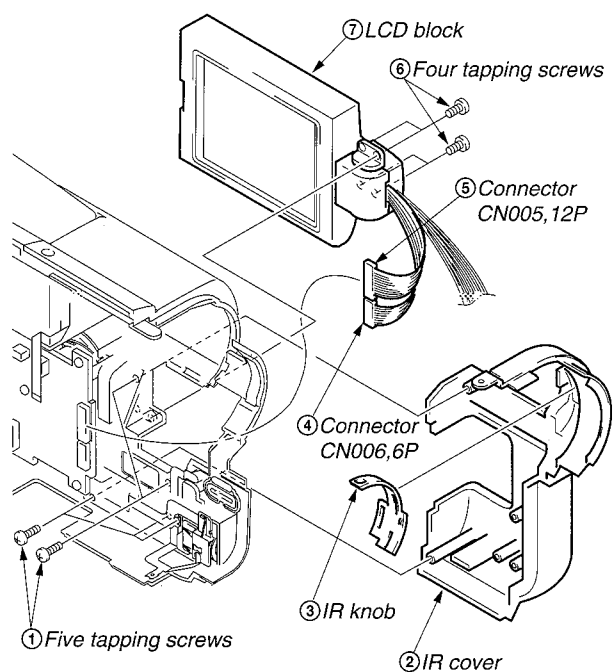
2-3. REMOVAL OF EVF BLOCK



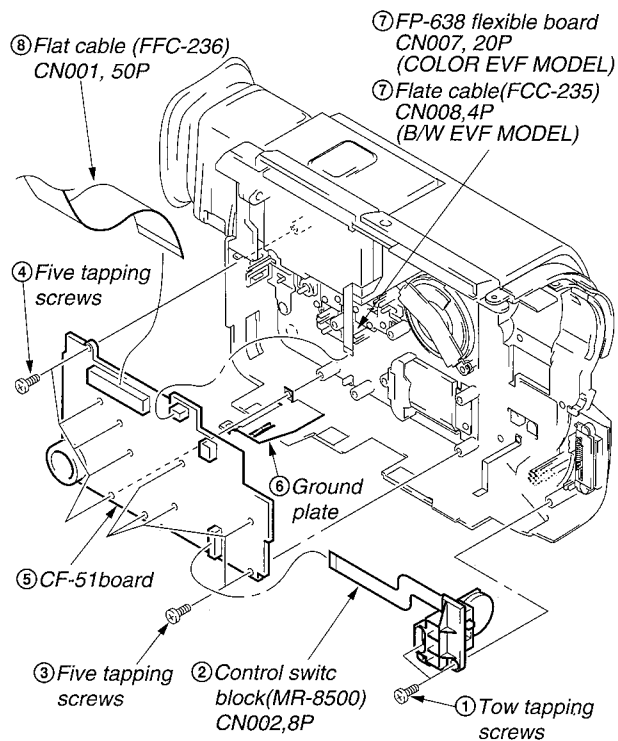
2-4. REMOVAL OF LCD BLOCK (3/3.5 INCH)



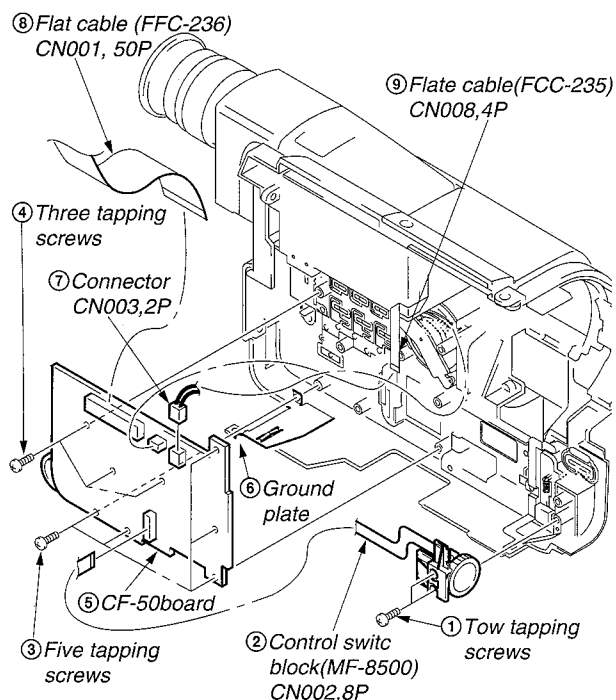
2-5. REMOVAL OF LCD BLOCK (2.5 INCH)



2-6. REMOVAL OF CF-51 BOARD AND CONTROL SWITCH BLOCK (MR-8500) (COLOR)

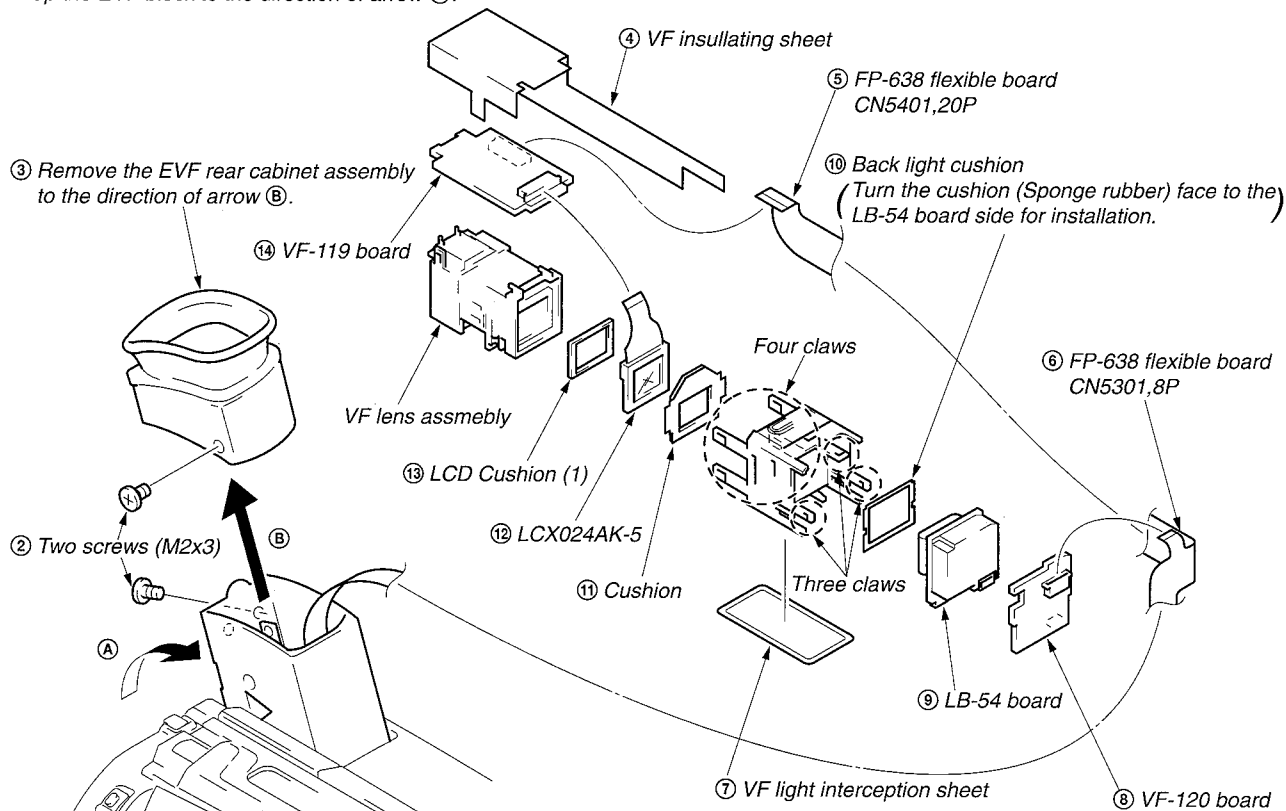


2-7. REMOVAL OF CF-50 BOARD AND CONTROL SWITCH BLOCK (MF-8500) (B/W)

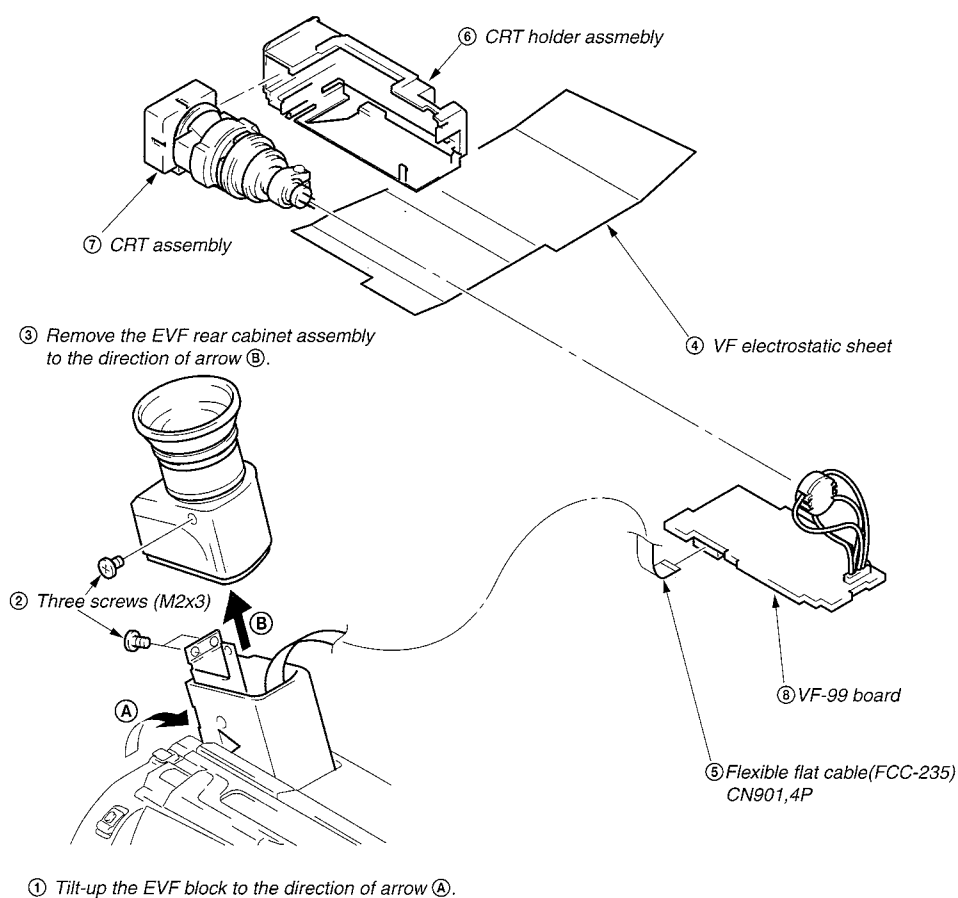


2-8. REMOVAL OF EVF BLOCK-2 (COLOR)

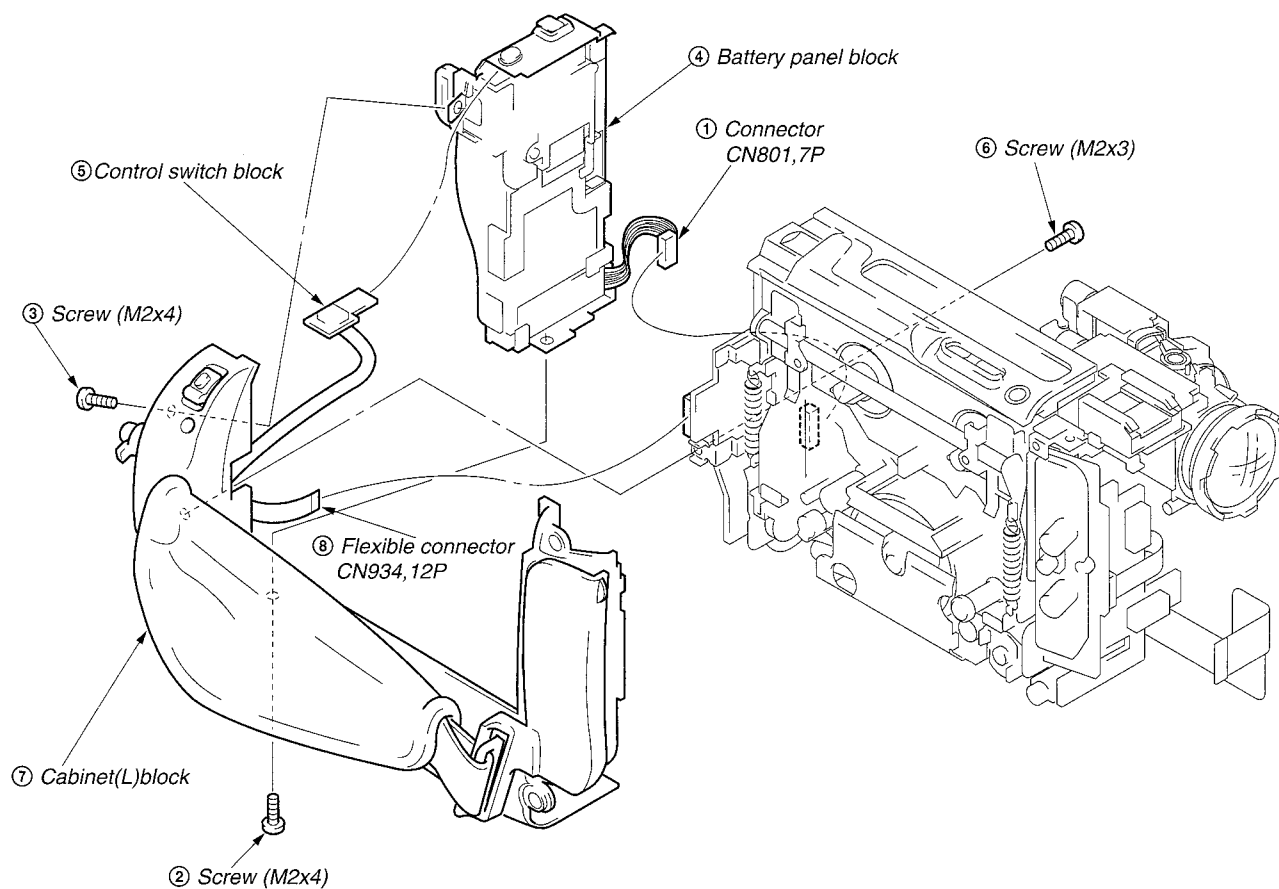
① Tilt-up the EVF block to the direction of arrow ①.



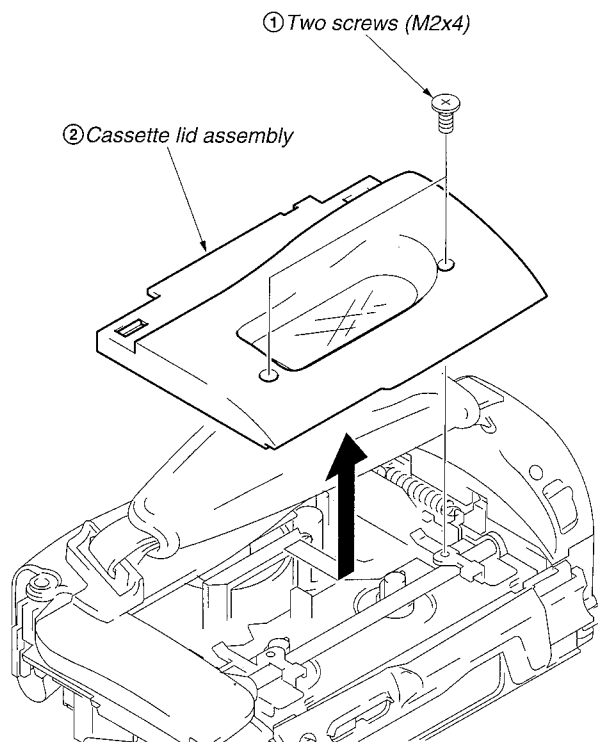
2-9. REMOVAL OF EVF BLOCK-2 (B/W)



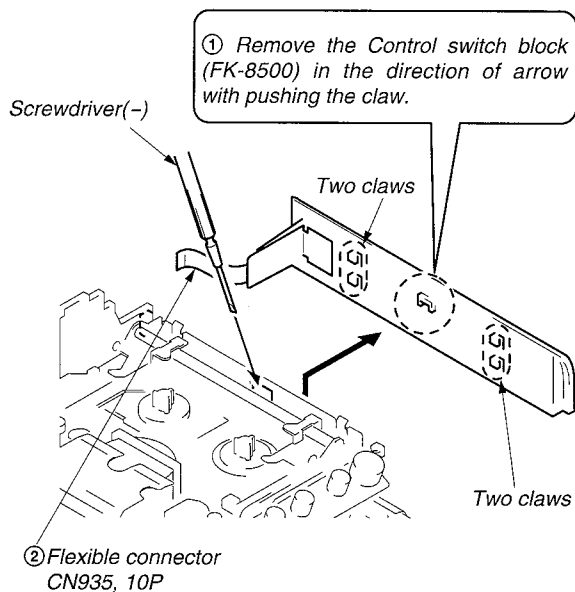
2-10. REMOVAL OF CABINET (L) BLOCK AND BATTERY PANEL BLOCK



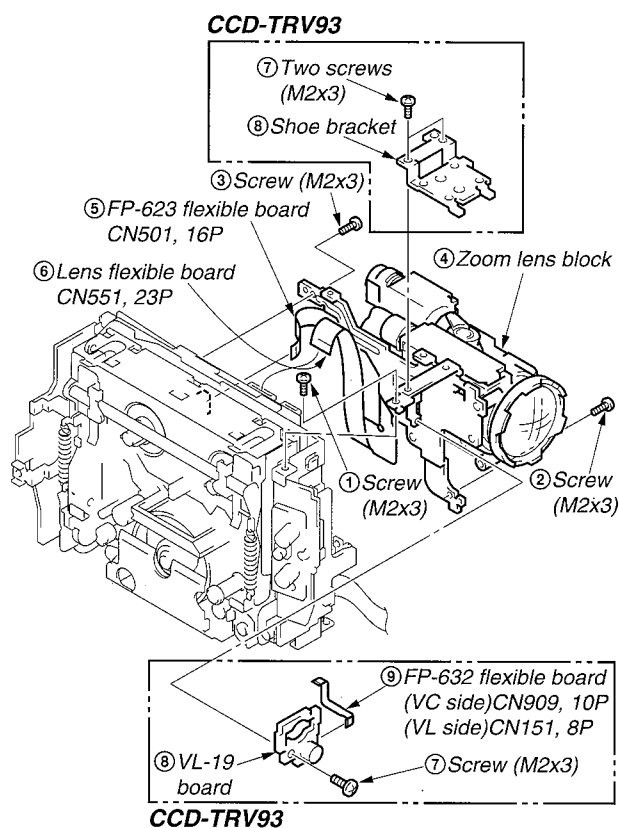
2-11. REMOVAL OF CASSETTE LID ASSEMBLY



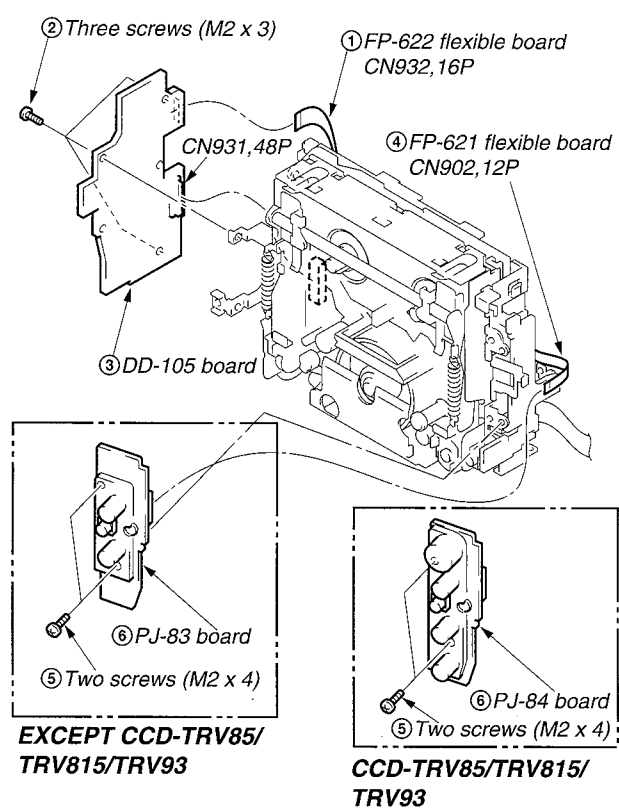
2-12. REMOVAL OF CONTROL SWITCH BLOCK (FK-8500)



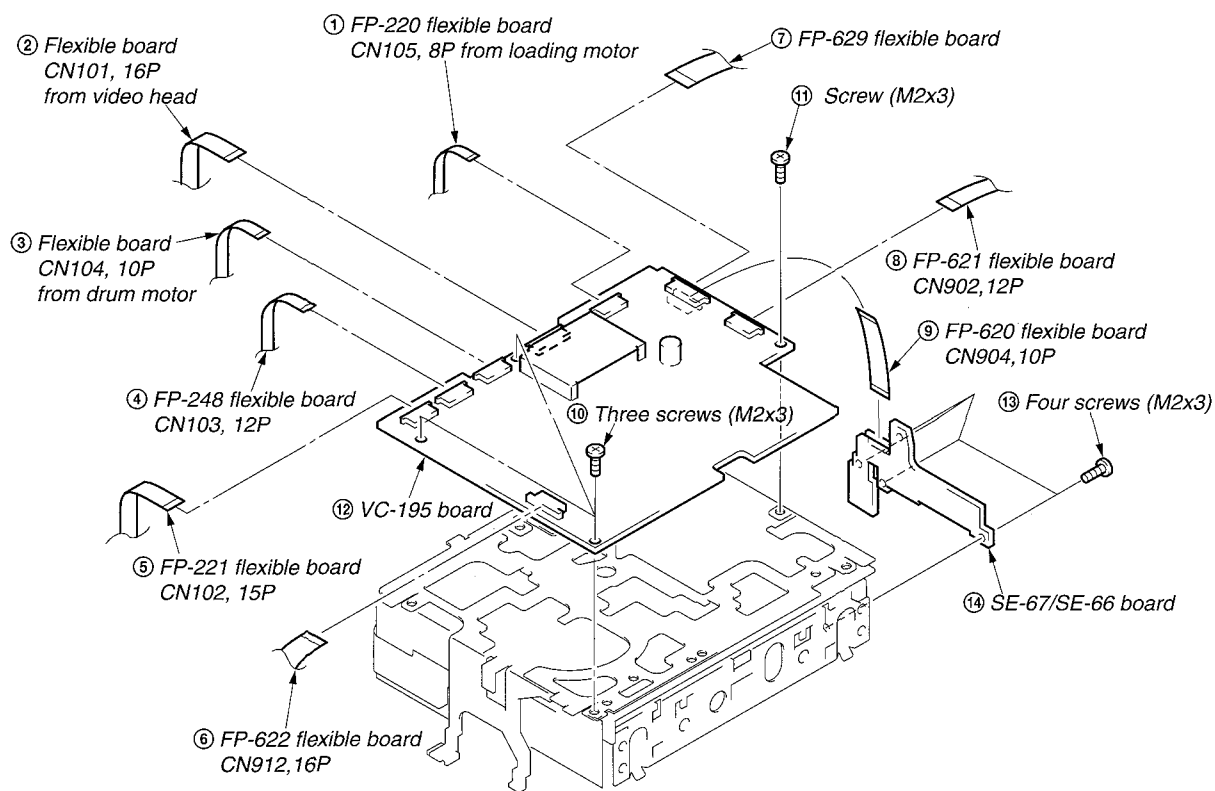
2-13. REMOVAL OF ZOOM LENS BLOCK AND VL-19 BOARD



2-14. REMOVAL OF DD-105 BOARD AND PJ-84 (PJ-83) BOARD

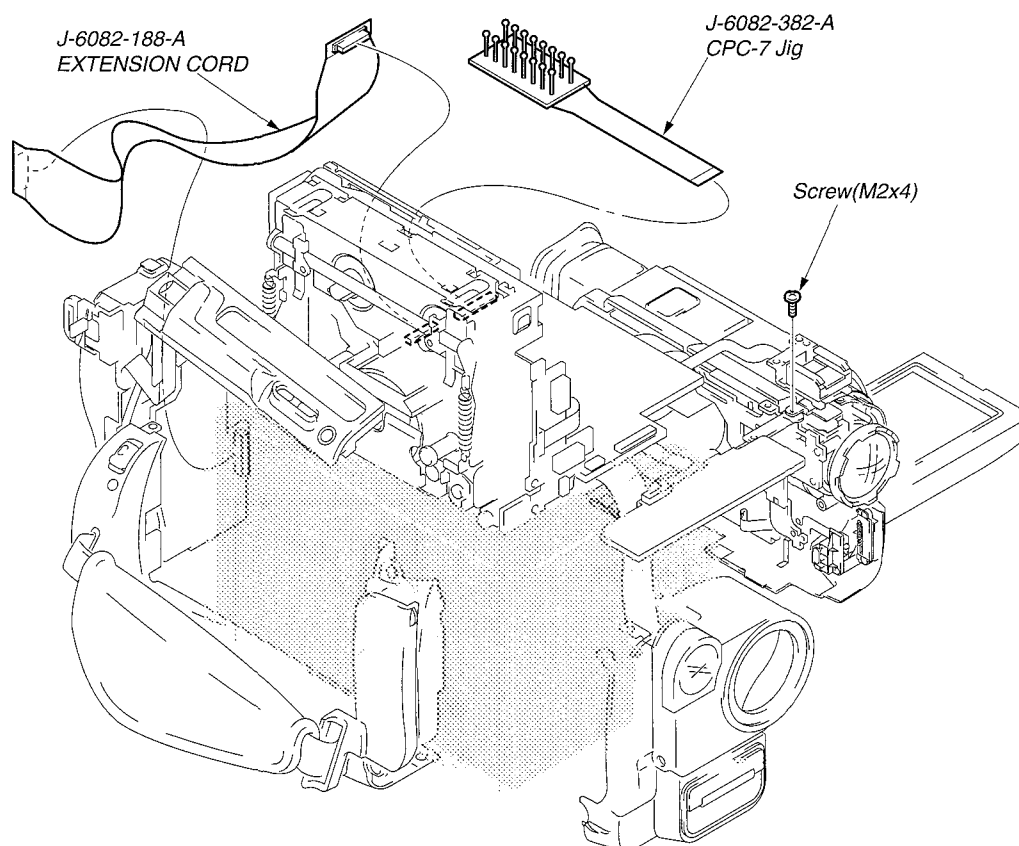


2-15. REMOVAL OF VC-195 AND SE-67 (SE-66) BOARD



2-16. SERVICE POSITION

PREPARATION; Refer to the previous section "DISASSMBLY", and connect as shown in the figure after each parts has been removed.

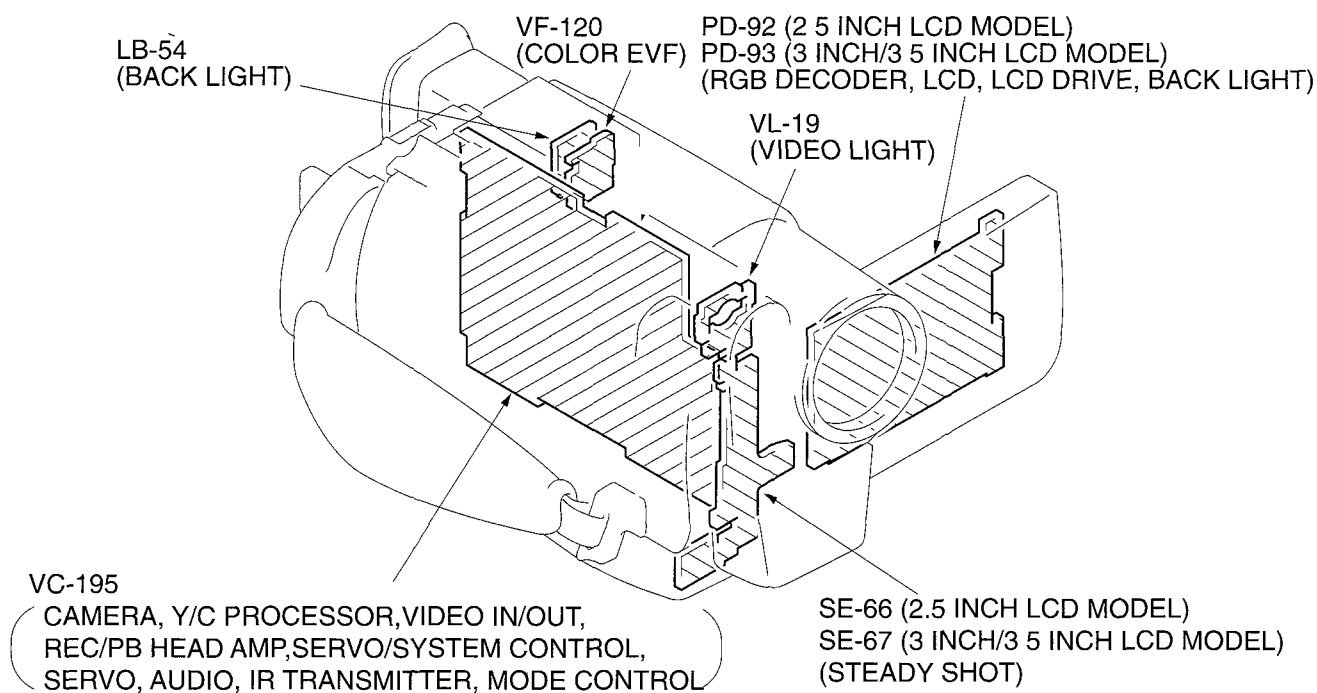
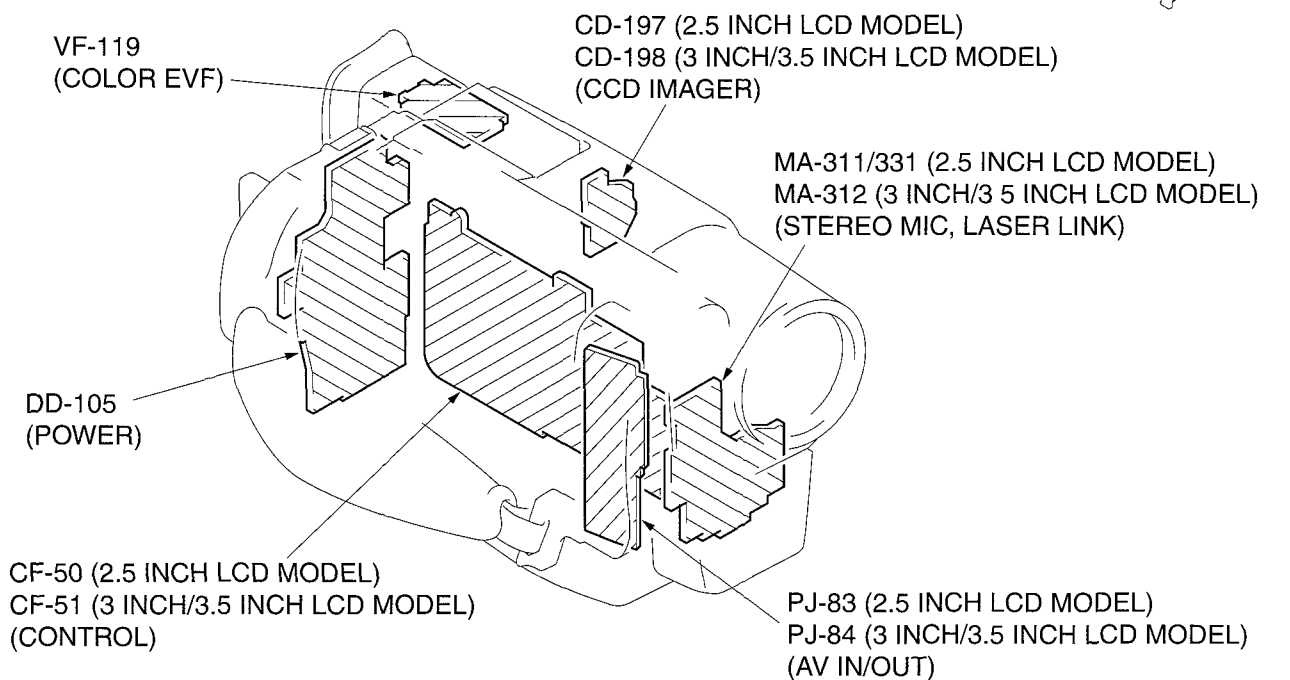
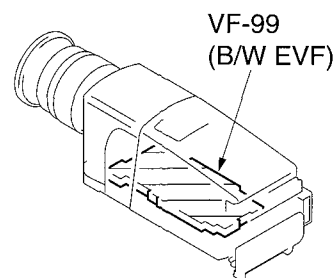


2-17. CIRCUIT BOARDS LOCATION

2.5 INCH LCD MODEL : CCD-TRV15/TRV15E/TRV15EP/
TRV15PK/TRV25/TRV25PK/
TRV35/TRV35E/TRV65/
TRV65PK/TRV215/TRV615

3 INCH LCD MODEL : CCD-TRV93

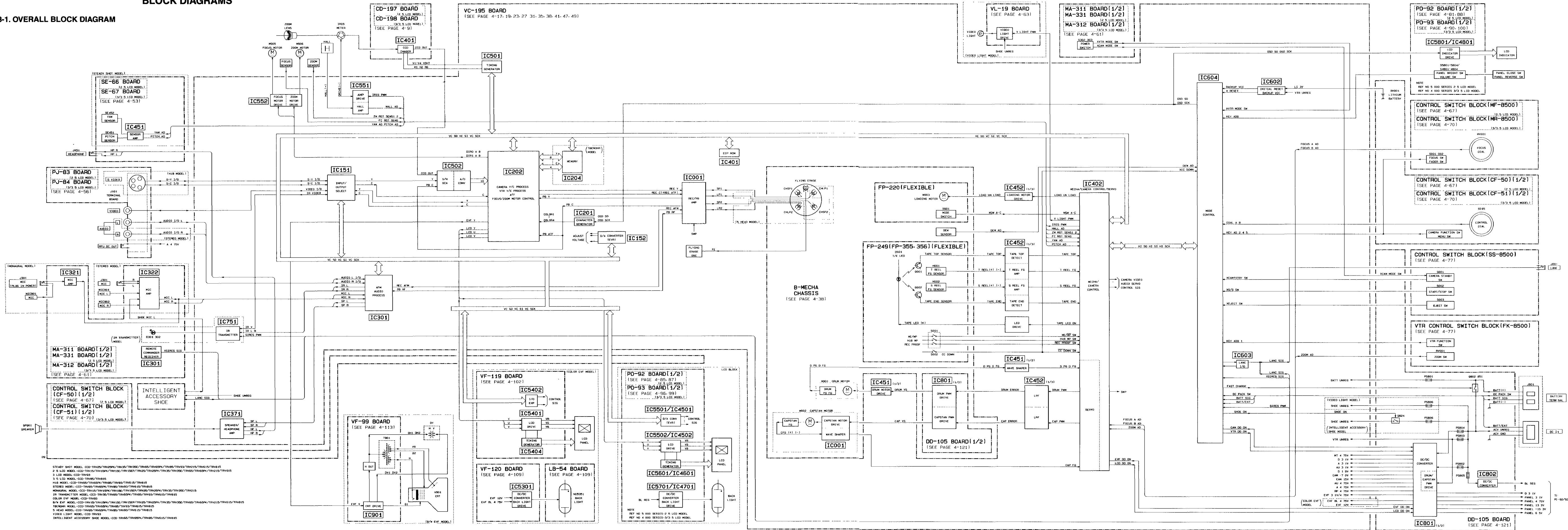
3.5 INCH LCD MODEL : CCD-TRV85/TRV815



SECTION 3

BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM



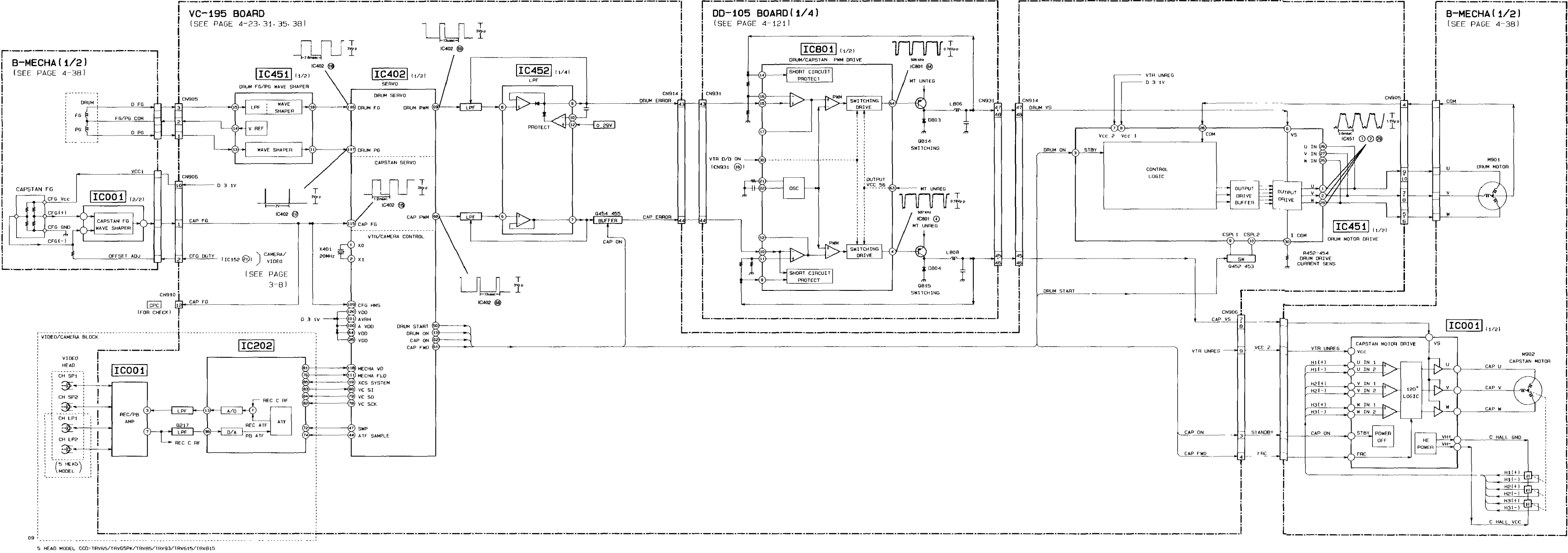
3-2. CAMERA/VIDEO 1 BLOCK DIAGRAM



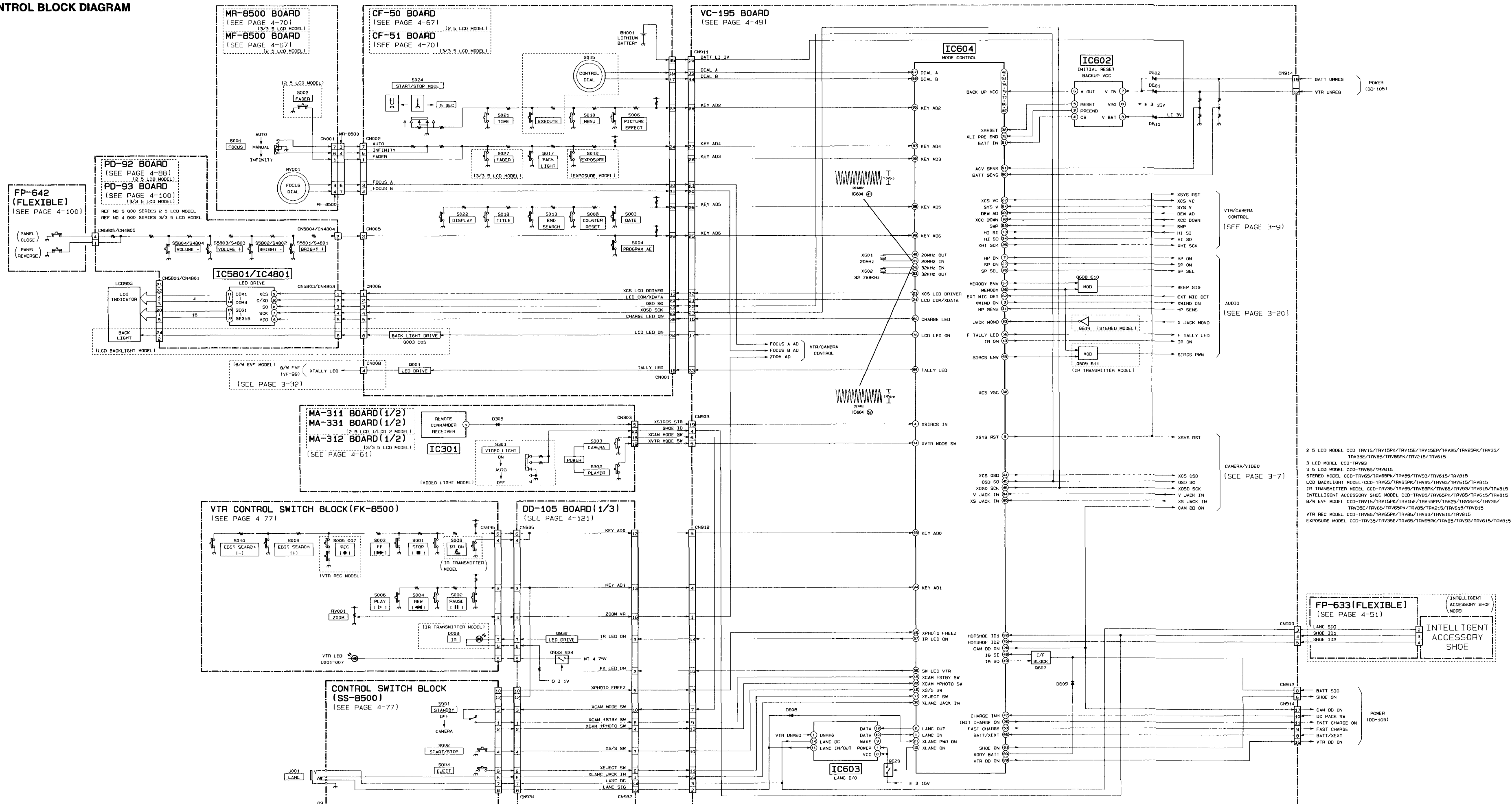
3-9



3-4. SERVO BLOCK DIAGRAM



3-5. MODE CONTROL BLOCK DIAGRAM

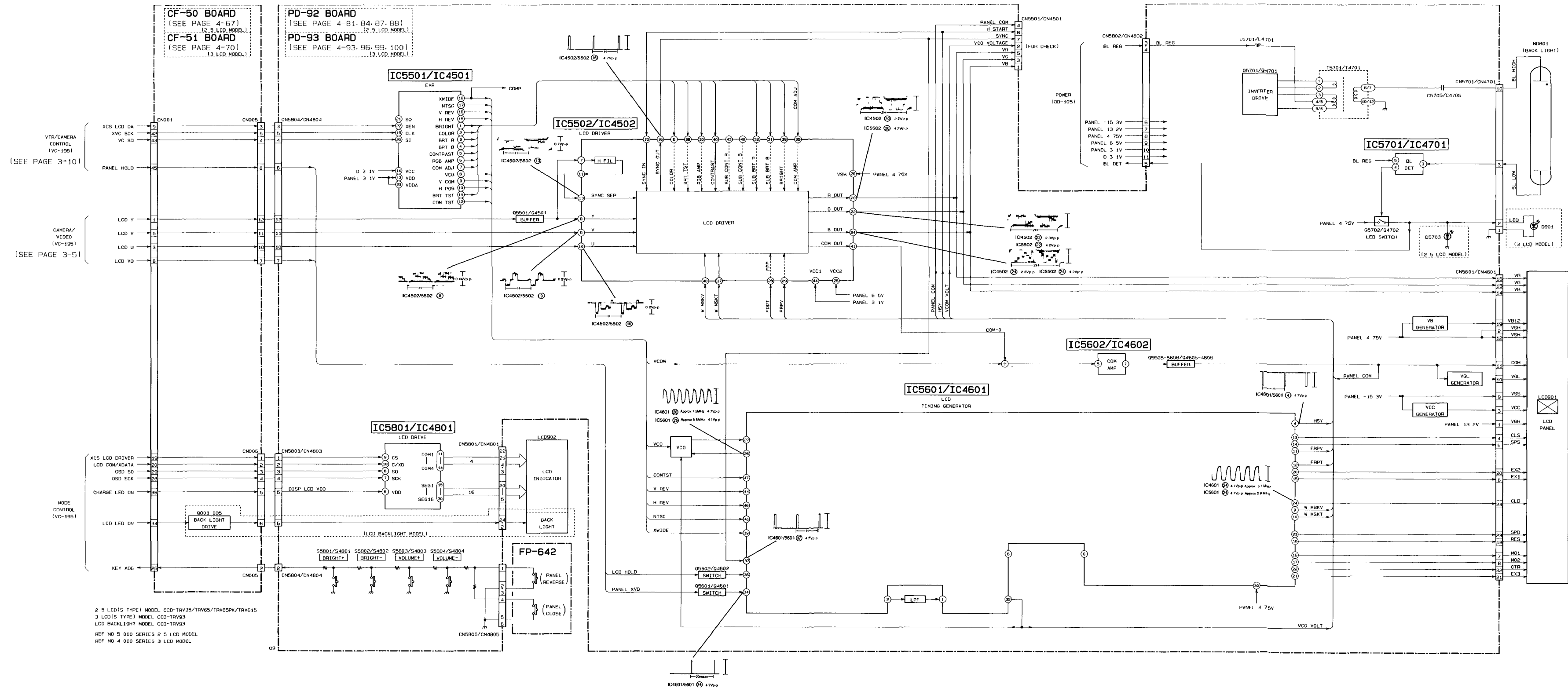


3-20



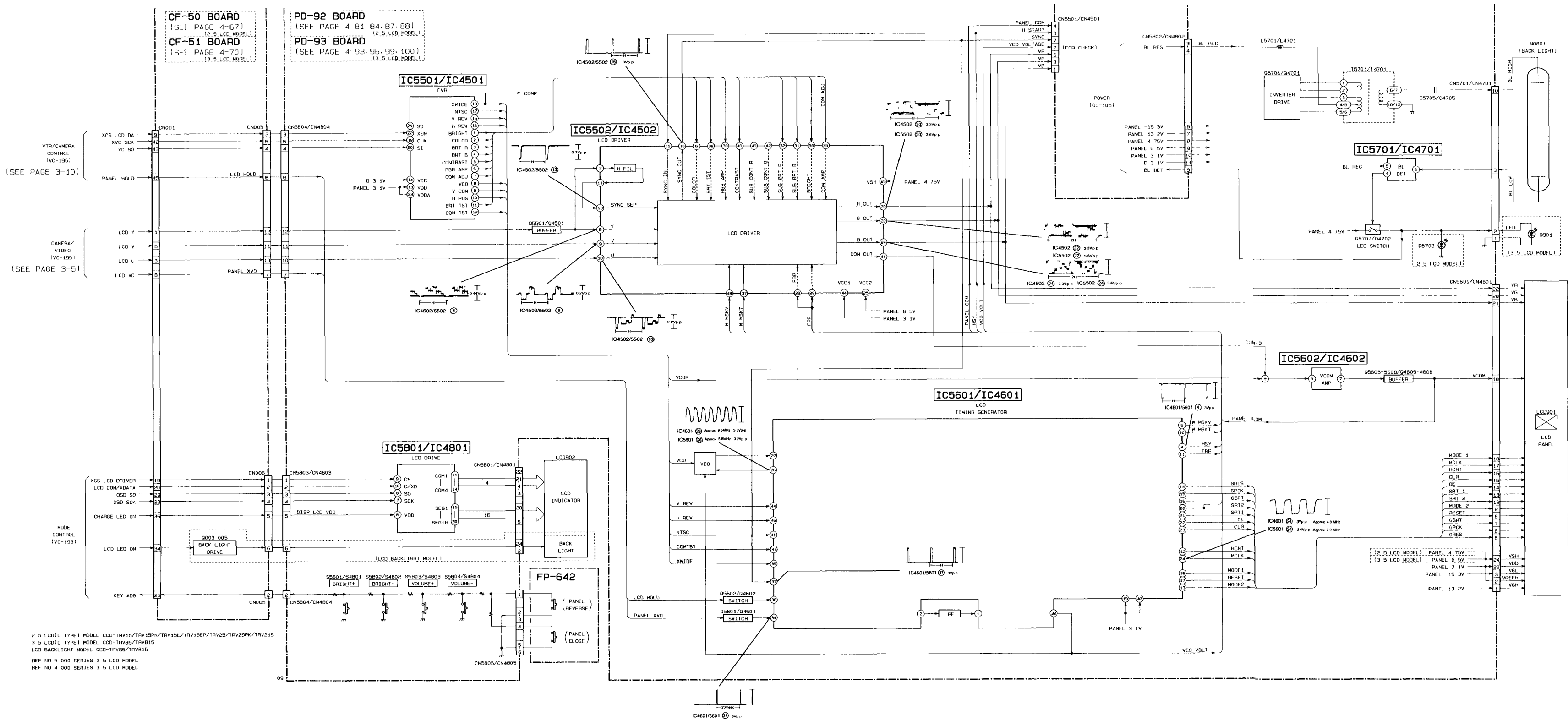
3-22

3-7. LCD (CCD-TRV35/TRV65/TRV65PK/TRV93/TRV615) BLOCK DIAGRAM

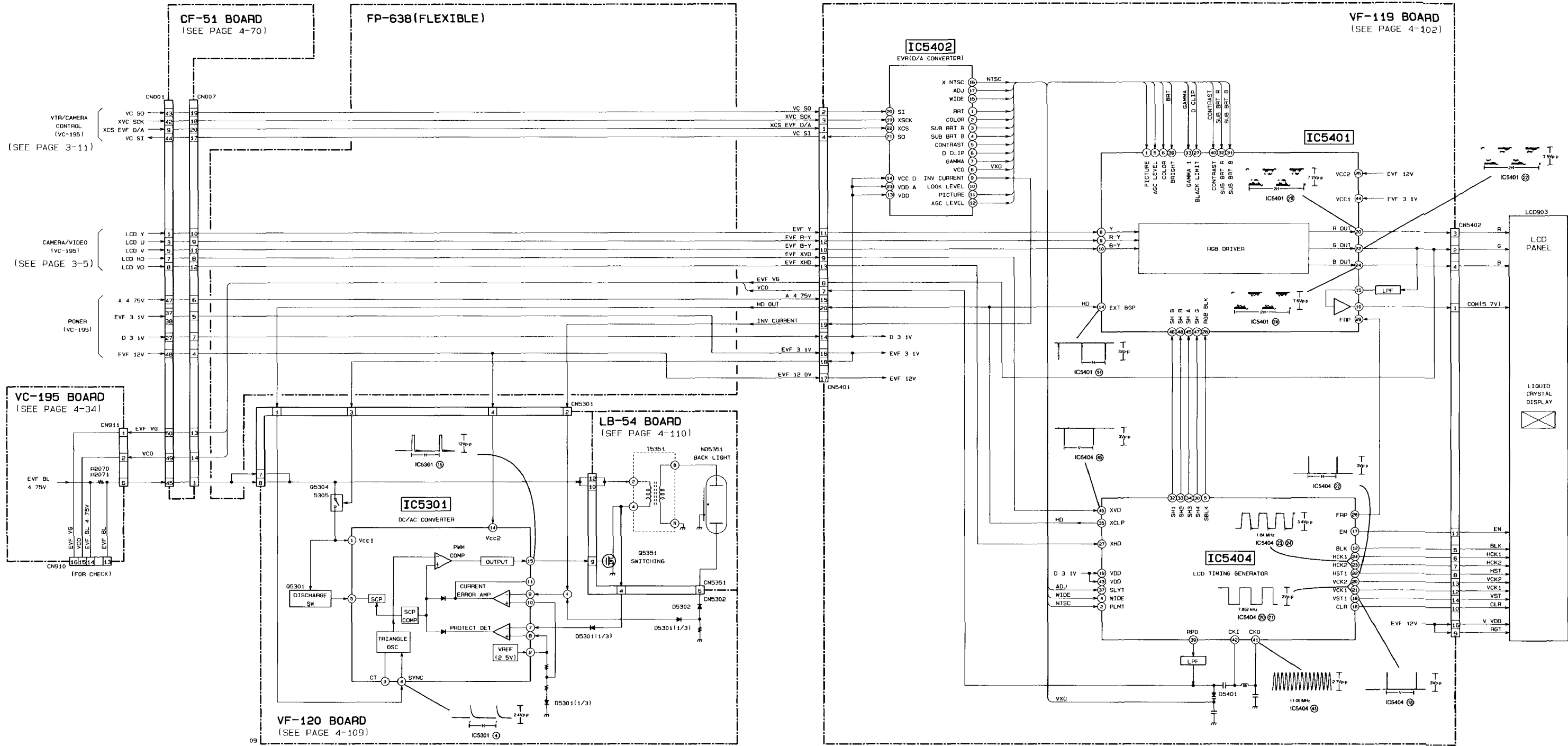


CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

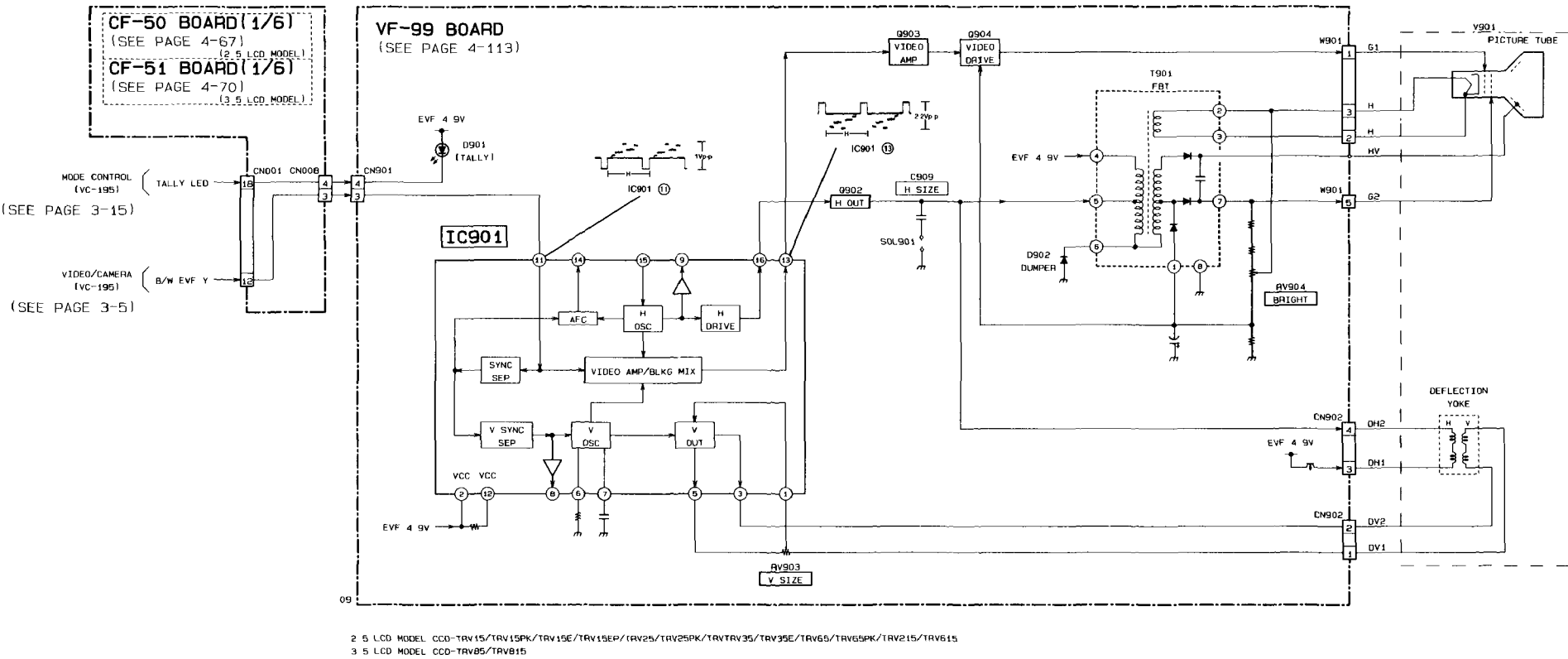
3-8. LCD (CCD-TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV85/TRV215/TRV815) BLOCK DIAGRAM



3-9. COLOR EVF BLOCK DIAGRAM



3-10. B/W EVF BLOCK DIAGRAM



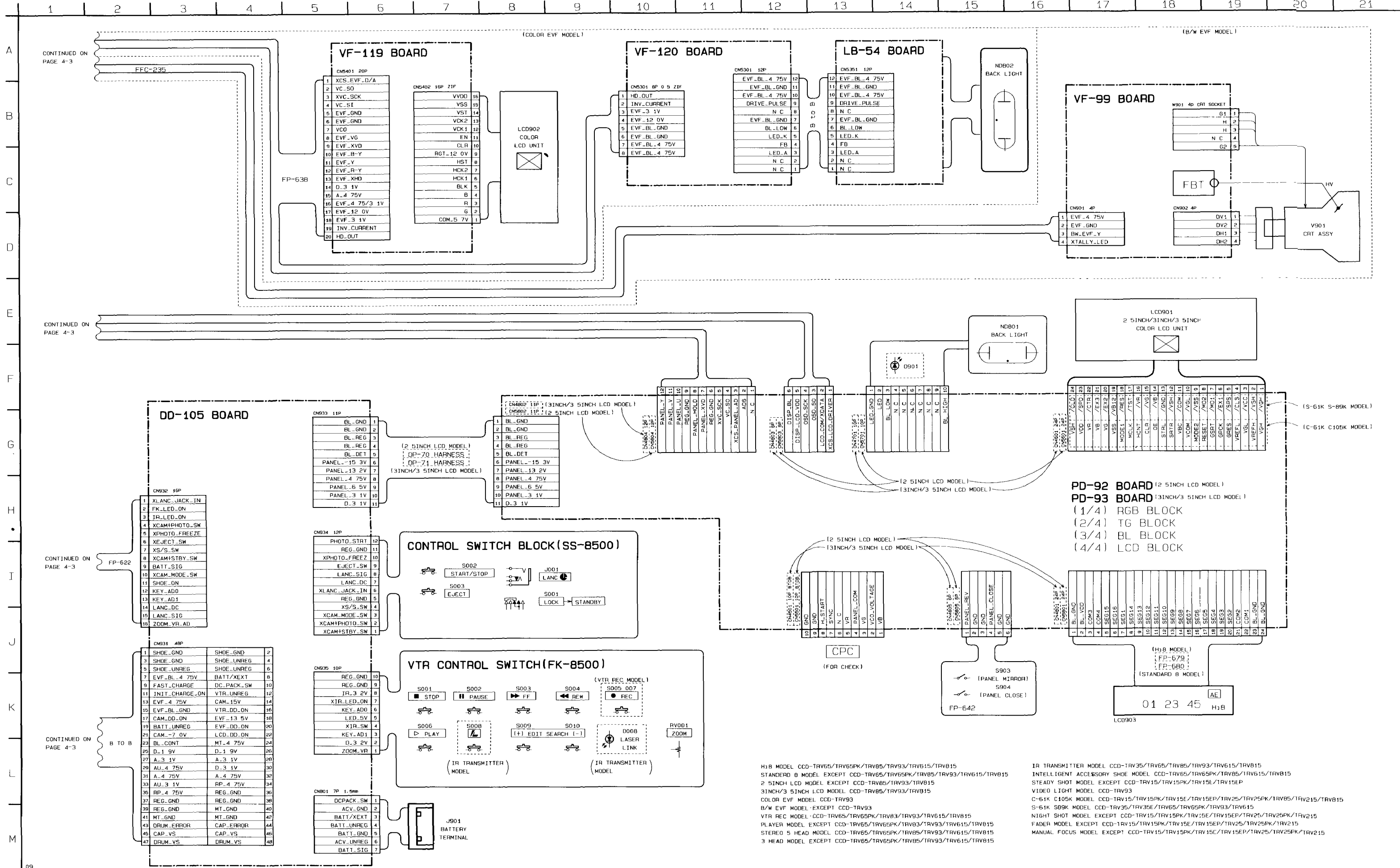
3-3



CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

FRAME SCHEMATIC DIAGRAM (2)



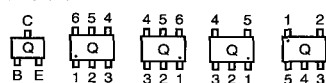
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

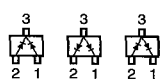
• For printed wiring boards.

- Pattern from the side which enable seeing.
(The other layer's patterns are not indicated.)
- Circled numbers refer to waveforms.
- Through hole is omitted.
- There are few cases that the part printed on diagram isn't mounted in this model.
- Chip parts.

Transistor



Diode



• For schematic diagrams.

- All capacitors are in μF unless otherwise noted. pF : μF .
- 50 V or less are not indicated except for electrolytics and tantalums.
- Chip resistor are 1/16W unless otherwise noted.
- $\text{k}\Omega$: 1000 Ω , $\text{M}\Omega$: 1000 $\text{k}\Omega$.
- Caution when replacing chip parts.
New parts must be attached after removal of chip.
Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- Some chip part will be indicated as follows.

Example	C541	L452
	22U	10UH
	TA	2520
	A	
Kinds of capacitor	Temperature characteristics	External dimensions (mm)

- Constants of resistors, capacitors, ICs and etc with XX indicate that they are not used. In such cases, the unused circuits may be indicated.
- Parts with $\star$ differ according to the model/destination. Refer to the mount table for each function.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- Signal name
XEDIT $\rightarrow$ EDIT PB/XREC $\rightarrow$ PB/REC
- non flammable resistor.
- fusible resistor.
- panel designation.
- B+ Line
- B- Line
- IN/OUT direction of (+, -) B LINE.
- adjustment for repair.
- Circled numbers refer to waveforms.

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

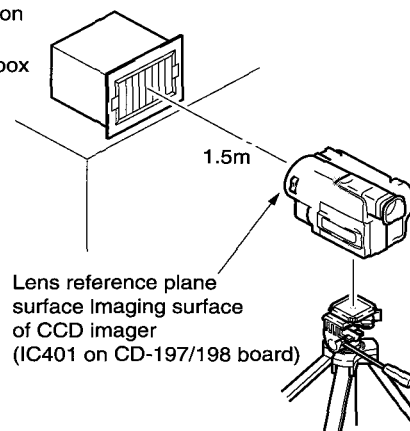
Refer to page 3 as for "Table for difference of functions" of models and classification.

• Measuring conditions voltage value and waveform.

- The object is color bar chart of pattern box.
- Voltages and dc between ground and measurement points. Readings are taken with a digital multimeter (DC 10M Ω).
- Voltages variations may be noted due to normal production tolerances.

1.Connection

Pattern box



2.Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

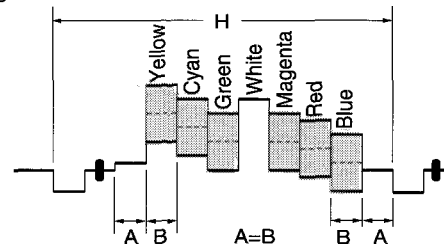


Fig. a (Video output terminal output waveform)

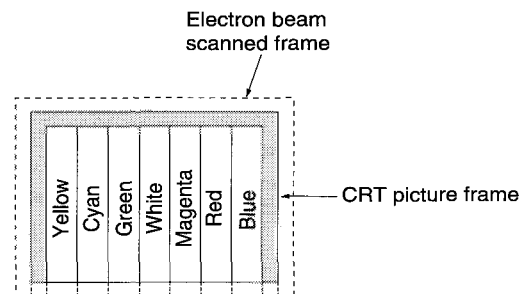
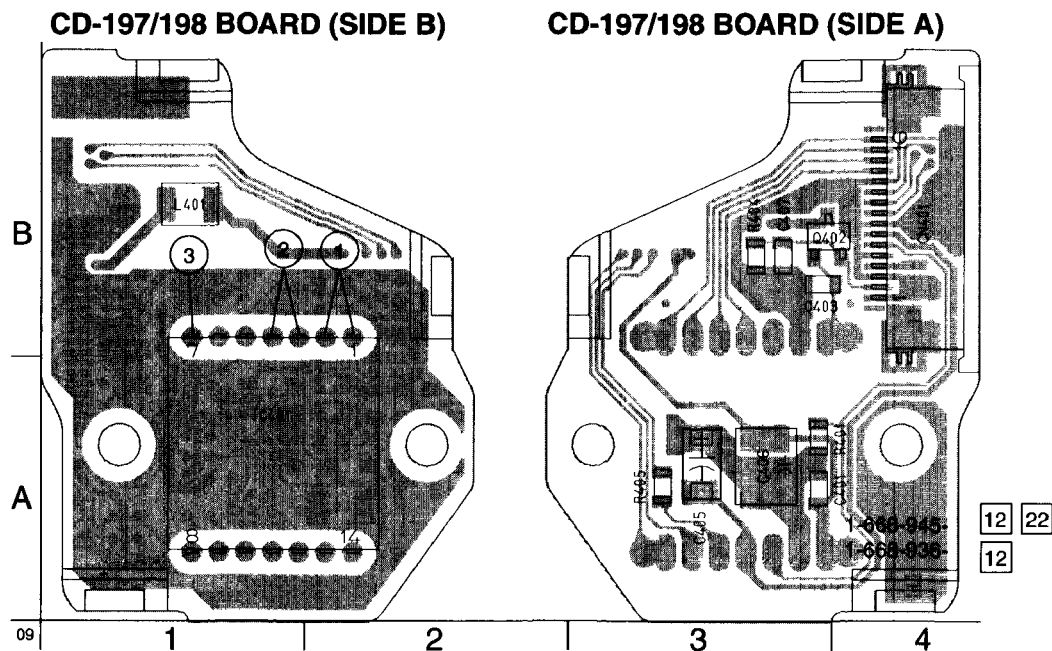


Fig. b (Picture on monitor TV)

CD-197/198 (CCD IMAGER) (2.5 INCH LCD, 3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD

– Ref No. CD-197 BOARD: 4,000 series, CD-198 BOARD: 9,000 series –



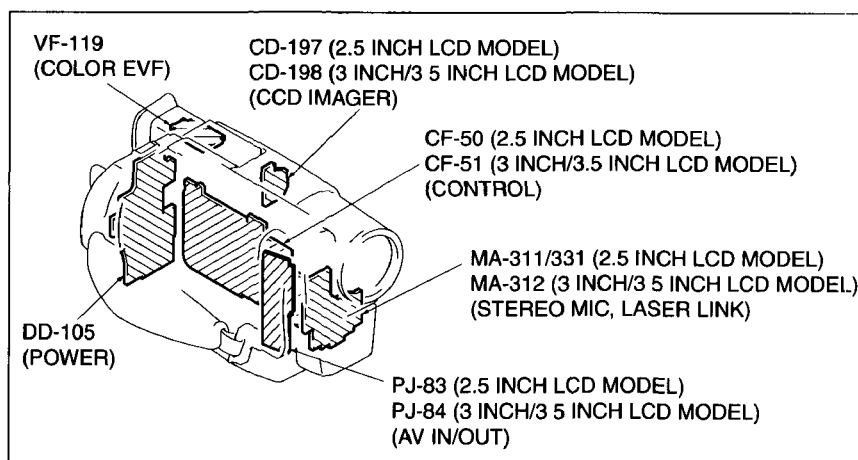
CD-197/
CD-198 BOARD

C401	A-3
C403	B-3
C405	A-3
C406	A-3
C407	B-3
CN401	B-4
IC401	A-1
L401	B-1
Q402	B-3
R401	A-3
R404	B-3
R405	A-3

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



CCD-TRV15/TRV15E/TRV15EPK/TRV15PK/TRV25/TRV25PK/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

VC-195 (CAMERA, Y/C PROCESSOR, IN/OUT, REC/PB HEAD AMP, SERVO/SYSTEM CONTROL, SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL) PRINTED WIRING BOARD

— Ref No VC-195 BOARD 1,000 series —

VC-195 BOARD (SIDE B)

VC-195 BOARD
(SIDE B)

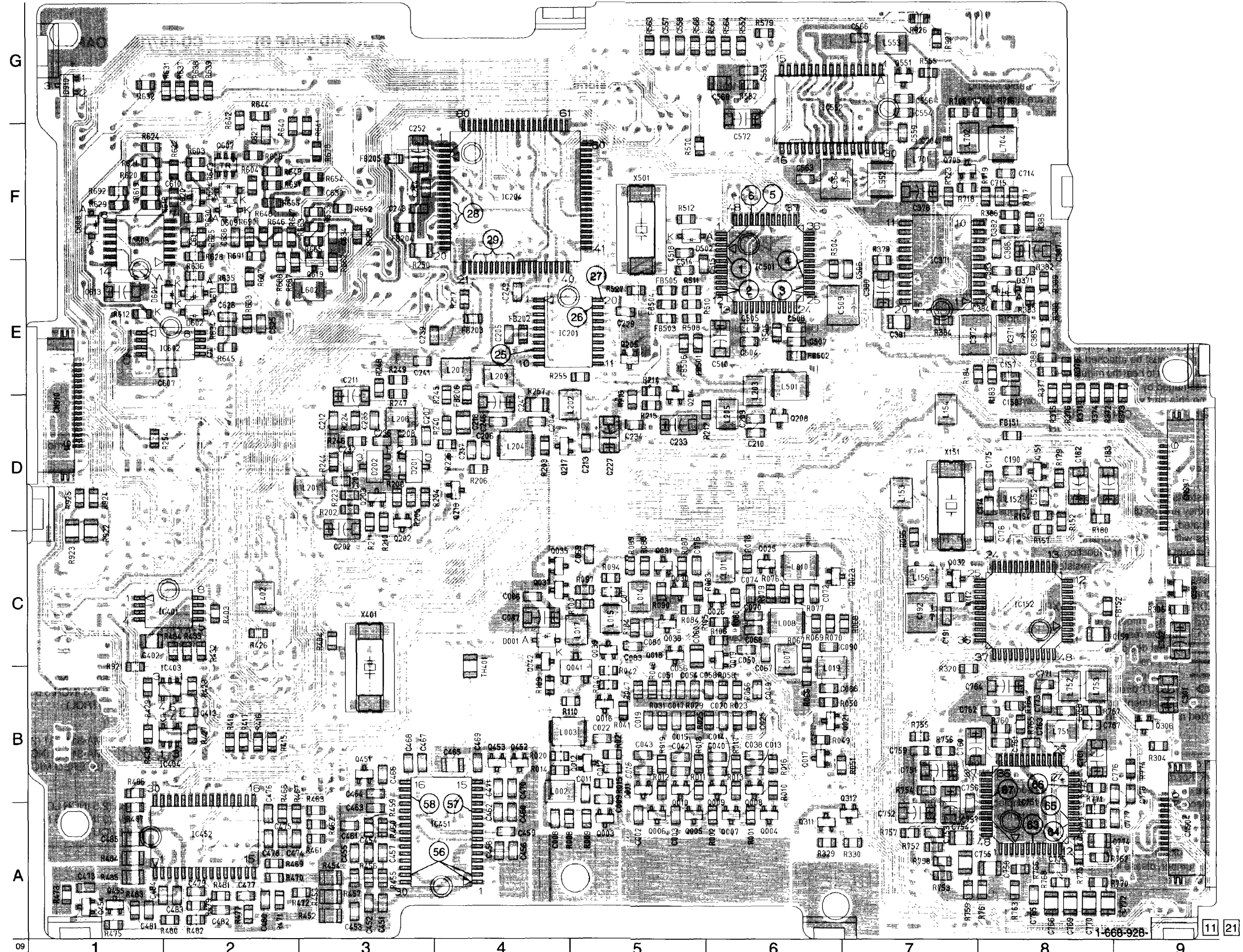
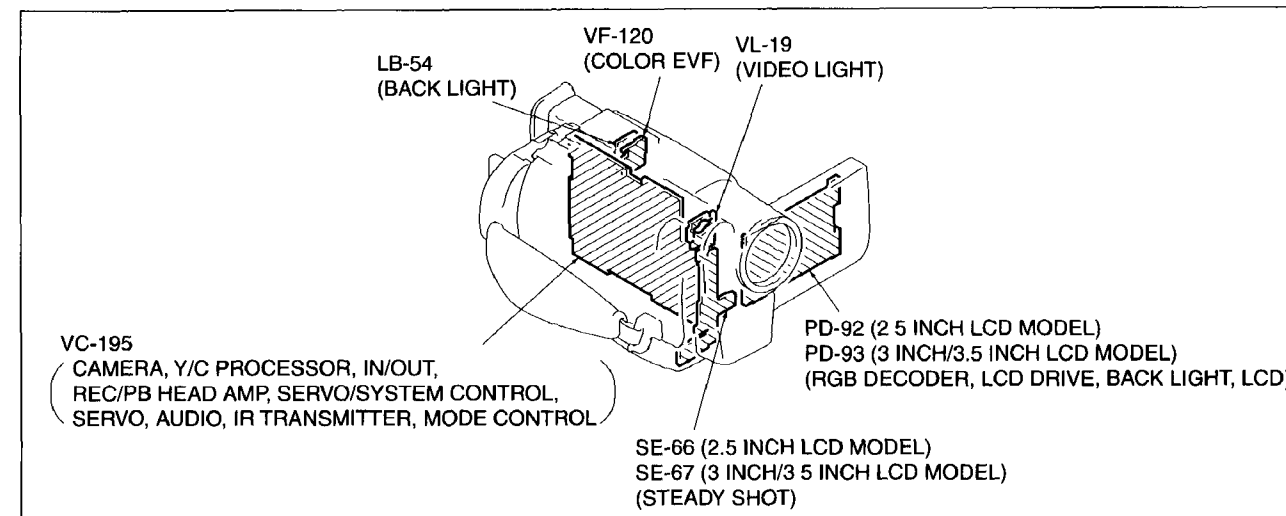
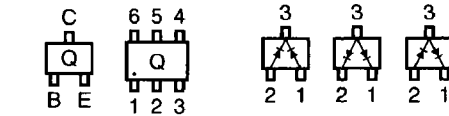
C002	A-5	C213	D-5	C481	A-1	C774	A-8	L156	C-7	Q454	A-1	R112	C-7	R428	B-2	R628	E-2	R773	B-8
C003	A-5	C217	D-4	C482	A-2	C775	A-8	L201	D-3	Q455	A-1	R152	D-8	R429	B-1	R629	F-1	R774	B-9
C008	A-4	C218	D-4	C483	A-2	C776	B-8	L202	D-4	Q551	G-7	R154	D-8	R430	B-1	R630	F-2	R775	A-8
C009	B-5	C227	D-5	C484	A-2	C777	A-8	L203	D-6	Q607	F-2	R157	D-8	R432	C-2	R631	G-2	R921	B-1
C011	B-5	C229	E-5	C485	A-1	C778	B-9	L204	D-4	Q619	E-3	R179	D-8	R433	C-2	R632	G-1	R922	D-1
C012	B-5	C232	D-3	C504	E-6	C781	B-8	L205	D-6	Q620	F-2	R180	D-8	R434	C-2	R633	E-2	R923	D-1
C013	B-6	C233	D-5	C505	E-6			L206	D-3	Q705	F-7	R183	E-8	R452	A-3	R634	E-2	R924	D-1
C014	B-6	C234	D-5	C506	E-7			L207	E-4			R184	E-8	R453	A-3	R635	E-2	R925	D-1
C015	B-5	C235	D-3	C507	E-6	CN804	A-9	L208	E-4	R001	A-6	R202	D-3	R454	A-3	R636	E-2	R926	G-7
C016	B-5	C236	D-3	C508	E-6	CN807	D-9	L209	E-4	R002	A-6	R203	D-4	R455	A-3	R637	G-2	R927	G-7
C017	B-5	C239	E-4	C509	E-7	CN910	D-1	L209	E-4	R008	A-4	R204	D-3	R456	A-3	R638	G-2		
C019	B-5	C241	E-3	C510	E-6			L209	E-4	R009	A-5	R205	D-3	R457	A-3	R639	G-2		
C020	B-6	C243	F-3	C514	E-5	D001	C-4	L209	E-4	R010	B-6	R206	D-4	R458	A-3	R640	F-2		
C022	B-5	C244	F-3	C515	E-5	D201	D-3	L209	E-4	R011	B-5	R207	D-3	R459	A-3	R641	F-2		
C025	B-6	C245	D-4	C518	F-5	D202	D-3	L209	E-4	R012	B-5	R208	D-3	R460	A-3	R642	F-2		
C038	B-6	C246	D-4	C553	G-6	D371	E-8	L209	E-4	R013	B-6	R211	D-3	R462	A-3	R643	F-2		
C040	B-6	C247	D-4	C554	G-7	D601	E-2	L209	E-4	R014	B-4	R212	D-6	R463	A-3	R644	F-2		
C042	B-5	C249	E-4	C556	G-7	D602	E-2	L209	E-4	R015	B-5	R214	D-5	R467	A-2	R645	E-2		
C043	B-5	C252	F-3	C557	G-5	D604	F-2	L209	E-4	R016	B-6	R215	D-5	R468	A-2	R646	E-2		
C048	B-6	C301	B-9	C558	G-5	D608	F-1	L209	E-4	R017	B-6	R216	D-5	R469	A-2	R647	F-2		
C050	B-6	C312	C-9	C559	F-7	D609	F-2	L209	E-4	R018	B-5	R217	E-4	R470	A-2	R648	F-2		
C051	B-5	C371	E-8	C563	F-6	D611	E-2	L209	E-4	R019	B-5	R223	D-3	R471	A-2	R649	F-2		
C054	B-5	C372	E-8	C564	F-7	D910	G-1	L209	E-4	R020	B-4	R224	D-3	R472	A-3	R651	F-2		
C056	B-5	C378	F-7	C566	G-7			L209	E-4	R021	B-5	R226	D-4	R473	A-1	R652	F-3		
C058	B-6	C380	E-7	C569	G-6			L209	E-4	R023	B-6	R240	D-4	R475	A-1	R653	F-3		
C060	C-5	C381	E-7	C572	F-6	FB203	E-4	L209	E-4	R025	B-6	R244	D-3	R477	A-2	R654	F-3		
C066	B-6	C382	F-8	C603	F-1	FB204	F-3	L209	E-4	R029	B-5	R246	D-3	R479	A-2	R655	F-2		
C067	C-6	C383	E-8	C607	E-2	FB205	F-3	L209	E-4	R030	B-6	R247	D-3	R480	A-2	R662	E-3		
C068	C-6	C384	E-8	C610	F-2	FB206	D-4	L209	E-4	R031	B-5	R248	E-3	R481	A-2	R663	F-3		
C069	C-5	C385	E-8	C611	F-2	FB501	E-5	L209	E-4	R041	B-5	R249	E-3	R482	A-2	R665	F-3		
C070	C-6	C387	F-8	C613	E-1	FB502	E-6	L209	E-4	R042	B-5	R250	F-3	R483	A-1	R678	F-3		
C072	C-6	C388	E-8	C625	E-2	FB503	E-5	L209	E-4	R047	B-5	R254	D-1	R484	A-1	R686	E-2		
C074	C-6	C402	G-1	C626	E-2	FB504	E-5	L209	E-4	R048	B-5	R255	E-5	R485	A-1	R687	E-2		
C076	C-5	C413	B-2	C627	F-2	FB505	E-5	L209	E-4	R049	B-6	R257	D-4	R486	B-1	R689	F-3		
C077	C-6	C451	A-3	C630	F-3	FB506	E-5	L209	E-4	R050	B-6	R304	B-9	R487	A-1	R690	F-2		
C080	C-5	C452	A-3	C634	F-3			L209	E-4	R051	B-6	R305	C-9	R504	E-6	R691	E-2		
C083	C-5	C453	A-3	C636	F-2			L209	E-4	R056	B-6	R329	A-6	R505	E-6	R692	F-1		
C086	C-4	C454	A-3	C704	F-7	IC152	C-8	L209	E-4	R058	B-6	R330	A-7	R508	E-5	R704	G-7		
C087	C-4	C455	A-3	C714	F-8	IC201	F-4	L209	E-4	R066	B-6	R371	D-8	R510	E-5	R705	G-8		
C090	C-6	C456	A-4	C715	F-8	IC371	E-7	L209	E-4	R067	C-6	R372	D-8	R511	E-5	R716	F-8		
C152	D-8	C457	A-3	C751	B-6	IC401	C-2	L209	E-4	R068	C-7	R373	D-9	R512	F-5	R717	F-8		
C157	E-8	C458	A-4	C752	A-7	IC403	B-2	L209	E-4	R069	C-5	R374	D-8	R527	E-5	R718	F-7		
C158	D-8	C459	A-4	C753	A-7	IC404	B-2	L209	E-4	R069	C-6	R375	D-8	R552	G-6	R719	F-8		
C159	C-8	C460	A-4	C754	A-7	IC451	A-4	L209	E-4	R070	C-6	R376	D-8	R555	G-7	R723	F-7		
C174	D-8	C461	A-3	C755	A-7	IC452	A-2	L209	E-4	R076	C-6	R377	E-8	R563	G-5	R752	A-7		
C175	D-8	C462	A-4	C756	A-7	IC501	E-6	L209	E-4	R077	C-6	R378	E-8	R564	G-6	R753	A-7		
C176	D-8	C463	A-4	C757	A-7	IC502	E-6	L209	E-4	R078	C-6	R379	E-7	R566	G-5	R754	B-6		
C182	D-8	C464	B-3	C758	A-8	IC602	E-2	L209	E-4	R079	C-6	R382	E-8	R567	G-6	R755	B-6		
C183	D-8	C465	B-4	C759	B-6	IC751	A-8	L209	E-4	R080	C-6	R383	E-8	R570	F-5	R757	A-7		
C190	D-8	C466	B-3	C760	B-6			L209	E-4	R083	C-5	R384	E-7	R579	G-6	R758	A-7		
C191	C-7	C467	B-3	C761	B-8			L209	E-4	R084	C-5	R385	F-8	R582	G-6	R759	A-7		
C192	C-7	C468	B-3	C762	B-8			L209	E-4	R087	C-5	R386	F-8	R603	F-2	R760	A-8		
C202	D-3	C469	B-4	C763	B-8			L209	E-4	R088	C-5	R388	F-8	R604	F-2	R761	A-8		
C203	D-3	C470	B-4	C764	B-8			L209	E-4	R090	C-5	R389	E-8	R608	F-2	R762	A-8		
C204	D-4	C471	B-4	C765	A-8			L209	E-4	R094	C-5	R389	E-8	R612	E-1	R763	A-8		
C205	E-4	C473	A-1	C766	A-8			L209	E-4	R095	C-7	R403	C-2	R618	F-1	R764	B-8		
C206	D-4	C474	A-2	C767	B-8			L209	E-4	R097	C-5	R404	C-3	R619	F-1	R765	B-8		
C207	D-3	C475	A-2	C768	B-8			L209	E-4	R100	C-5	R415	B-2	R620	F-1	R766	A-8		
C208	D-3	C476	A-2	C769	A-8			L209	E-4	R104	C-5	R416	B-2	R621	F-1	R767	B-8		
C209	D-6	C477	A-2	C770	A-8			L209	E-4	R105	C-6	R417	B-2	R622	F-2	R768	A-8		
C210	D-6	C478	A-2	C771	B-8			L209	E-4	R106	C-6	R418	B-2	R624	F-1	R770	A-8		
C211	D-3	C479	A-2	C772	A-8			L209	E-4	R109	B-4	R426	C-2	R625	F-2	R771	A-8		
C212	D-3	C480	A-2	C773	B-8			L209	E-4	R110	B-5	R427	B-2	R627	E-2	R772	A-8		

• For Printed Wiring Boards.

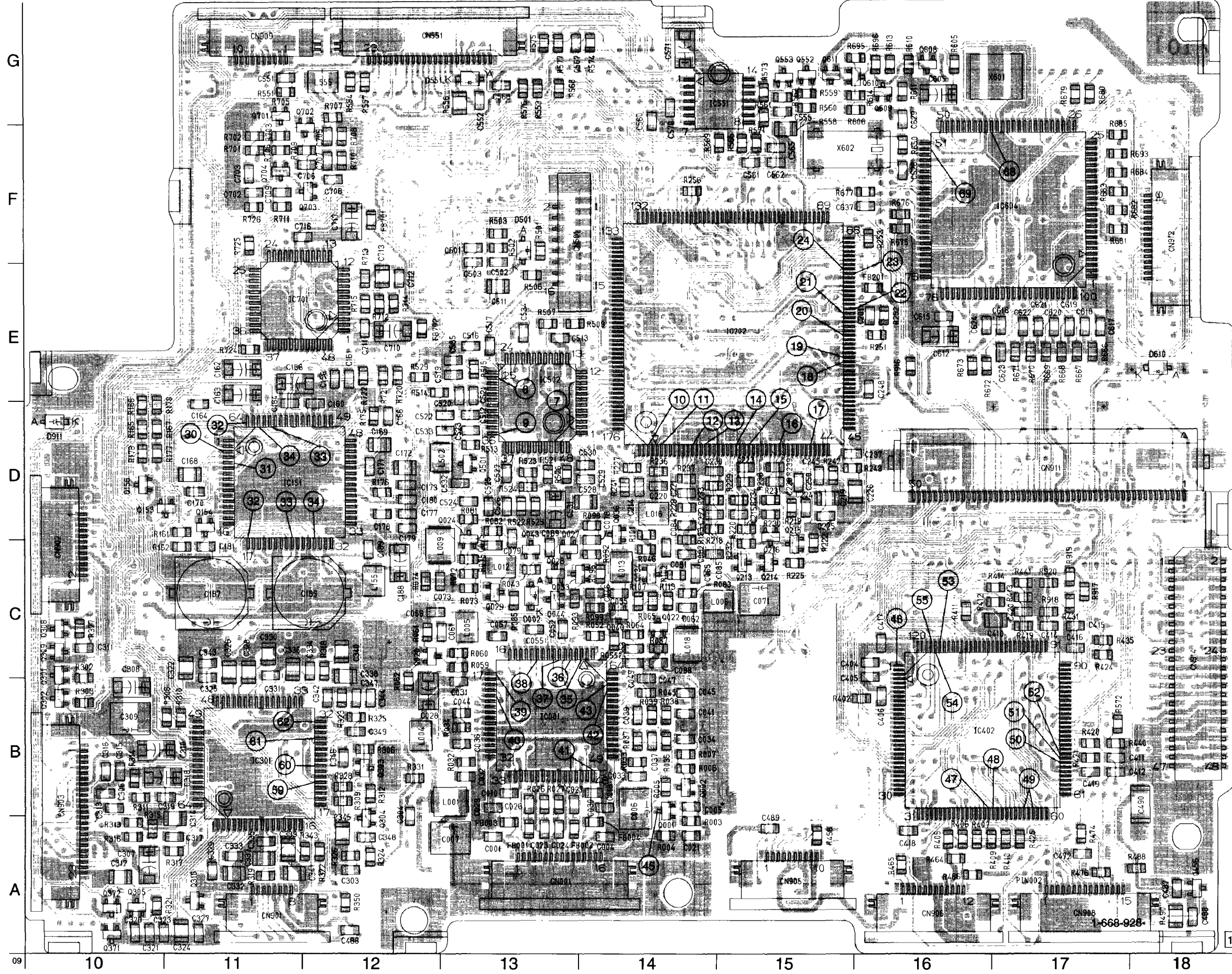
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram

• Chip transistor



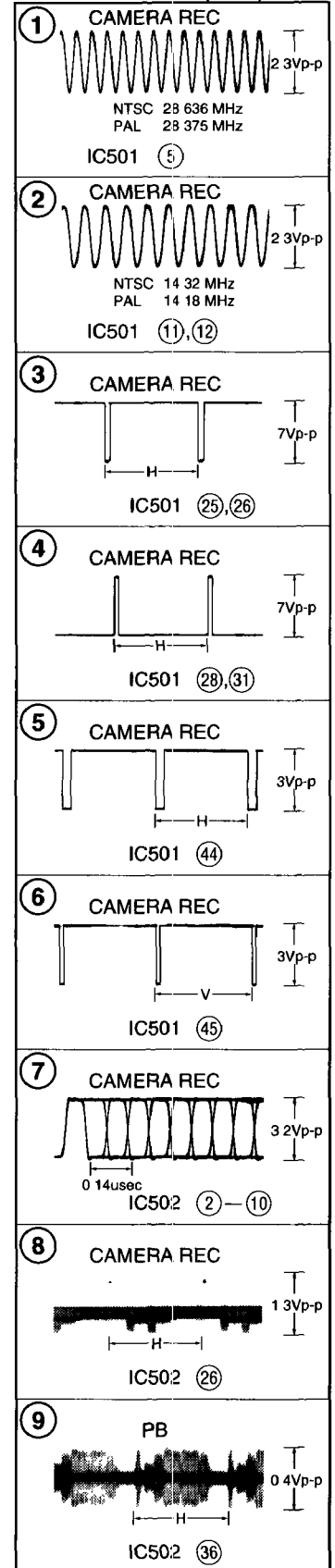
VC-195 BOARD (SIDE A)



VC-195 BOARD
(SIDE A)

C001	A-13	C328	C-11	CN908	A-17	R074	C-12	R527	B-17
C004	A-14	C330	C-11	CN909	G-11	R075	C-13	R529	E-12
C005	B-13	C331	C-11	CN911	D-13	R081	D-13	R551	G-11
C006	B-14	C332	A-11	CN912	F-18	R082	D-13	R552	G-15
C007	A-13	C333	A-11	CN914	B-18	R085	C-13	R553	G-13
C010	B-13	C334	C-12			R092	C-14	R554	G-12
C016	B-14	C335	A-11	D002	C-13	R093	C-13	R556	G-13
C021	A-14	C336	C-11	D501	F-13	R096	C-14	R557	G-12
C023	A-13	C337	A-11	D551	G-13	R098	D-14	R558	F-15
C024	A-13	C338	B-12	D610	E-18	R099	C-14	R559	G-15
C026	A-13	C339	A-11	D911	D-10	R101	D-14	R560	G-15
C027	B-13	C340	C-12			R102	C-14	R561	G-15
C028	B-13	C341	A-11	FB001	A-13	R103	C-14	R562	G-15
C029	B-12	C342	B-12	FB002	A-13	R107	C-14	R565	F-15
C030	B-14	C343	C-11	FB003	A-13	R113	C-14	R568	G-13
C031	B-13	C344	B-12	FB004	A-14	R161	D-11	R569	F-15
C032	B-13	C345	A-12	FB201	E-16	R162	C-11	R571	F-15
C033	B-14	C346	B-12	FB701	F-12	R165	D-10	R573	G-15
C034	B-14	C347	B-12	FB702	E-12	R166	D-10	R574	G-14
C035	C-14	C348	A-12			R167	D-10	R575	G-13
C036	B-13	C349	B-12	IC001	B-13	R170	D-10	R576	G-13
C037	B-14	C404	C-16	IC151	D-11	R175	D-12	R577	G-13
C039	B-14	C405	B-16	IC202	E-15	R176	D-12	R605	G-16
C041	B-14	C406	B-16	IC301	B-11	R177	D-10	R606	G-16
C045	B-14	C410	C-17	IC402	B-16	R178	D-10	R610	G-16
C046	B-14	C411	D-11	IC502	D-18	R179	D-10	R611	G-16
C047	B-14	C412	B-17	IC551	G-15	R219	D-15	R613	G-16
C049	B-14	C414	C-17	IC701	F-11	R220	D-15	R614	G-16
C052	C-13	C415	C-17			R222	C-15	R650	F-16
C053	C-14	C416	C-17	L001	B-13	R225	C-15	R666	E-17
C055	C-13	C417	C-16	L004	B-12	R227	D-14	R667	E-17
C057	C-13	C418	C-13	L005	C-13	R228	D-14	R668	F-12
C059	C-12	C419	B-17	L006	C-15	R229	D-14	R669	E-17
C061	C-13	C420	C-17	L009	C-13	R230	D-15	R670	E-17
C062	C-14	C472	A-17	L012	C-13	R231	D-15	R671	E-17
C065	C-14	C486	A-12	L013	C-14	R232	C-15	R672	E-16
C068	C-14	C487	A-18	L014	D-14	R233	D-14	R673	E-16
C071	C-15	C488	A-18	L018	C-14	R234	D-14	R675	F-16
C073	C-13	C489	A-15	L155	C-12	R236	D-14	R676	F-16
C075	C-13	C490	B-18	L502	D-13	R237	D-14	R679	G-17
C078	C-14	C501	F-13	L555	G-12	R238	D-15	R680	G-17
C079	C-13	C502	F-13			R239	D-15	R681	F-17
C081	C-14	C503	F-13	Q001	B-14	R241	D-14	R682	F-17
C082	C-14	C511	E-13	Q002	B-14	R242	D-15	R683	F-17
C084	D-14	C512	D-13	Q020	C-12	R243	D-16	R684	F-17
C085	C-14	C513	E-13	Q022	C-14	R251	E-16	R685	F-17
C088	C-14	C516	E-13	Q024	C-13	R252	E-16	R693	F-17
C089	C-13	C517	E-13	Q027	C-13	R253	F-16	R695	G-16
C156	E-12	C519	F-13	Q028	C-13	R256	F-16	R696	G-16
C160	D-12	C520	E-13	Q029	C-13	R302	C-10	R701	F-11
C161	E-12	C521	E-13	Q033	C-14	R303	B-10	R702	F-11
C162	E-11	C522	D-13	Q034	C-14	R306	B-12	R703	F-11
C163	E-11	C523	D-13	Q036	D-14	R308	B-11	R706	F-11
C164	D-11	C524	F-13	Q040	C-14	R309	B-12	R707	G-12
C166	D-12	C525	D-13	Q043	C-13	R310	B-11	R708	F-12
C168	D-11	C526	D-13	Q044	C-13	R311	B-10	R709	F-12
C169	D-12	C527	D-13	Q153	D-11	R312	B-12	R710	F-12
C170	D-11	C528	D-14	Q154	D-11	R313	A-10	R711	F-11
C171	D-12	C529	D-14	Q156	D-10	R314	B-10	R712	E-12
C172	D-12	C530	D-14	Q213	C-15	R315	A-10	R713	E-12
C173	D-12	C531	D-13	Q214	C-15	R316	A-10	R714	E-12
C177	D-12	C532	D-13	Q215	C-15	R317	A-11	R715	E-12
C178	D-12	C533	D-13	Q216	C-15	R318	C-12	R720	E-12
C179	D-12	C534	E-13	Q301	C-10	R319	A-11	R721	E-12
C180	D-12	C535	E-13	Q302	B-10	R321	A-10	R722	E-12
C181	C-11	C551	B-12	Q303	B-12	R322	A-12	R724	F-11
C184	D-11	C552	G-13	Q304	A-12	R323	B-12	R725	F-11
C185	C-12	C555	G-15	Q305	A-10	R325	B-12	R726	F-11
C186	E-11	C560	F-14	Q308	C-10	R326	A-12	R916	E-16
C187	C-11	C561	F-15	Q309	C-10	R327	C-1	R917	C-17
C188	C-12	C562	F-15	Q310	A-11	R328	B-12	R918	C-17
C189	C-12	C565	F-15	Q331	G-13	R331	B-11	R919	C-17
C201	E-16	C567	G-14	Q371	A-10	R343	A-12	R920	C-17
C214	D-14	C568	G-13	Q372	A-10	R350	A-12		
C215	D-15	C570	G-14	Q456	A-18	R402	B-16	X601	G-17
C219	D-15	C571	G-14	Q501	D-13	R405	A-16	X602	F-15
C220	D-14	C804	F-17	Q553	G-15	R406	A-16		
C221	D-14	C805	G-16	Q608	A-16	R407	A-16		
C222	D-14	C612	E-16	Q609	G-16	R409	A-16		
C223	D-15	C615	E-16	Q610	G-16	R410	A-17		
C224	D-15	C616	E-17	Q611	G-15	R411	C-16		
C225	D-15	C617	E-17	Q701	G-11	R412	C-17		
C226	D-18	C618	E-17	Q702	F-12	R413	C-17		
C228	D-15	C619	E-17	Q703	F-12	R414	C-17		
C230	D-14	C620	E-17	Q704	F-11	R419	C-17		
C237	D-16	C621	E-17			R420	B-17		
C245	D-15	C622	E-17	R003	A-14	R421	B-17		
C248	E-16	C623	E-17	R004	A-14	R424	C-17		
C250	D-15	C624	E-16	R005	B-14	R425	A-17		
C300	A-12	C628	F-16	R006	B-14	R431	C-17		
C304	A-12	C629	F-16	R007	B-14	R435	C-17		
C306	B-10	C637	F-16	R026	B-13	R440	B-17		
C307	A-10	C702	F-11	R027	B-13	R441	C-17		
C308	B-10	C703	F-11	R032	B-13	R458	A-15		
C309	B-10	C705	F-12	R033	B-14	R464	A-16		
C310	B-10	C706	F-12	R034	B-13	R465	A-16		
C311	C-10	C707	F-12	R035	B-14	R466	A-16		
C312	A-10	C708	F-12	R037	B-14	R474	A-17		
C313	B-10	C709	F-11	R038	B-14	R476	A-17		
C314	A-11	C710	E-12	R039	B-14	R488	A-18		
C315	B-10	C711	E-12	R043	B-14	R490	A-18		
C316	B-10	C712	E-12	R045	F-13	R501	F-13		
C317	A-11	C713	E-12	R046	C-14	R502	F-13		
C318	B-10	C716	F-12	R052	C-14	R503	F-13		
C319	B-11	C717	F-12	R055	C-14	R507	E-13		
C320	A-10			R057	C-14	R509	E-13		
C321	A-10	CN001	A-13	R059	C-13	R513	D-13		
C322	C-11	CN501	F-14	R060	C-13	R514	E-13		
C323	A-11	CN551	G-12	R062	B-12	R521	D-13		
C324	A-11	CN901	A-11	R063	C-14	R522	D-13		

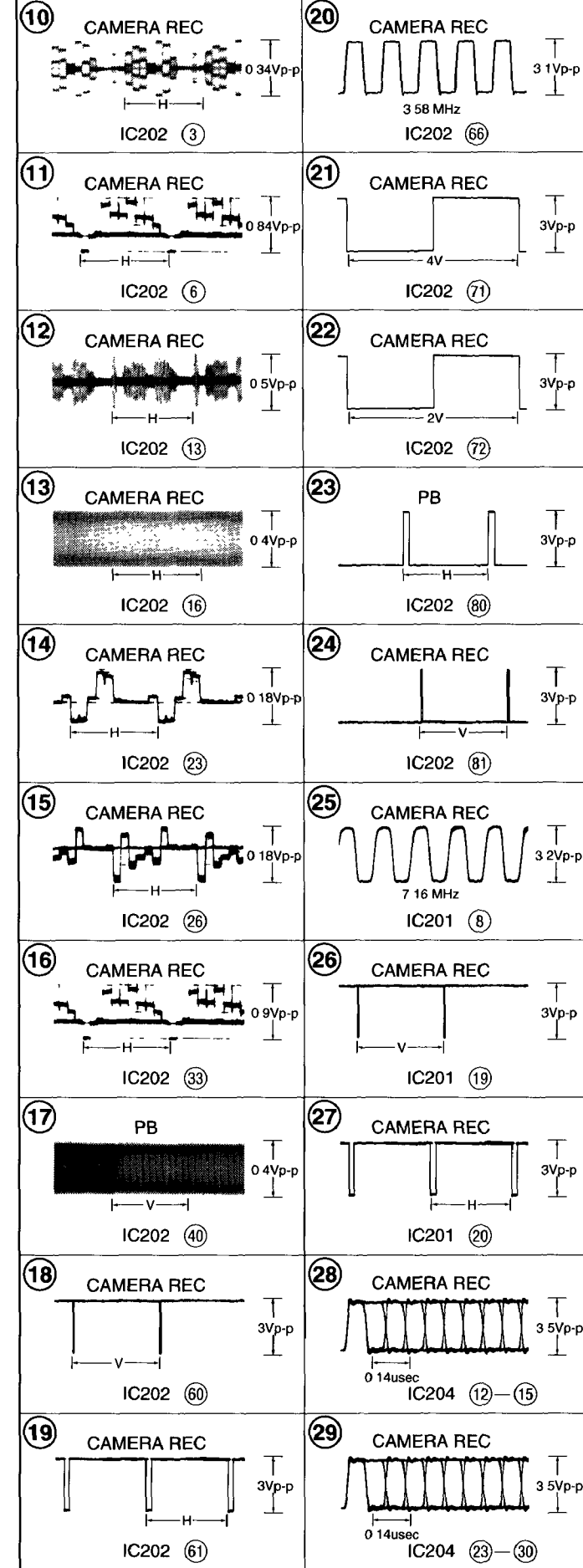
VC-195 BOARD (1/10)



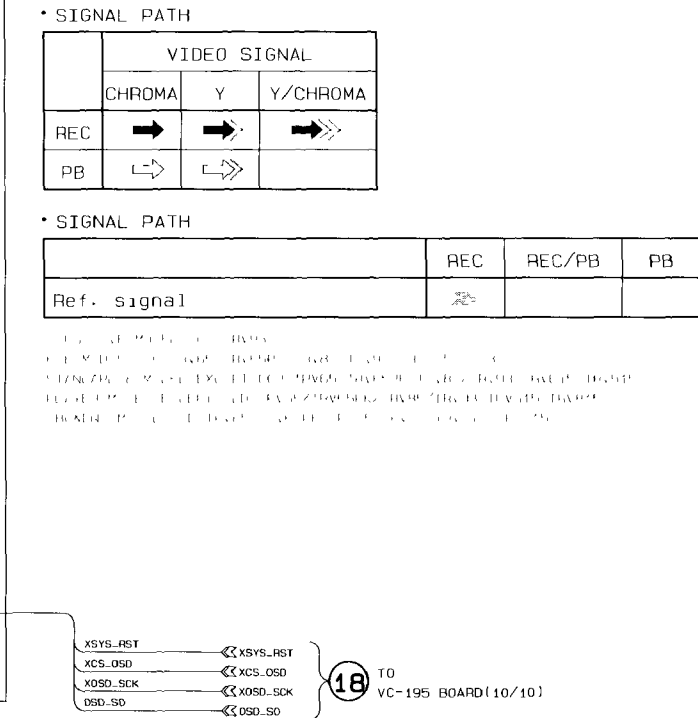
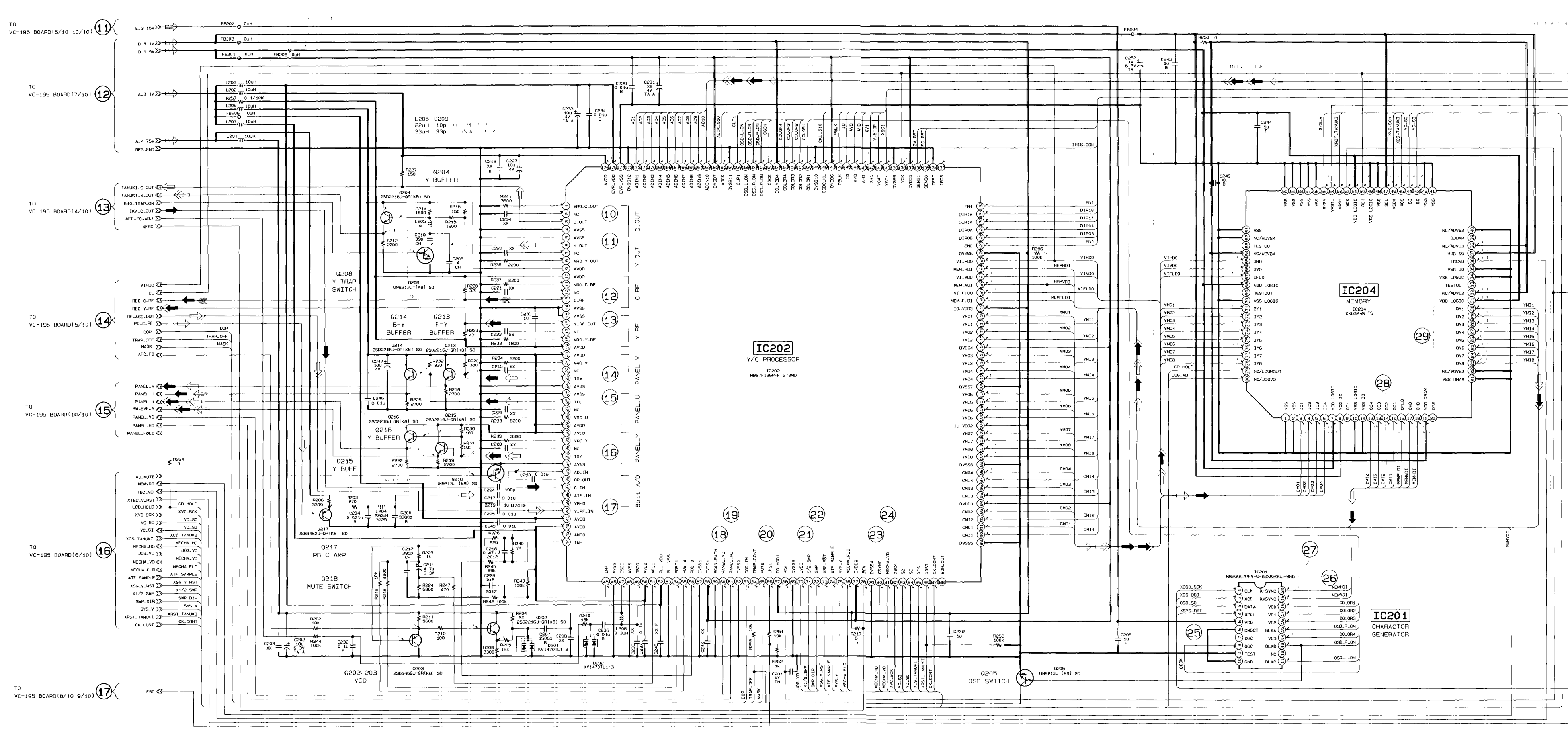


- For schematic diagrams.
- Refer to page 4-11 for Printed Wiring Board.

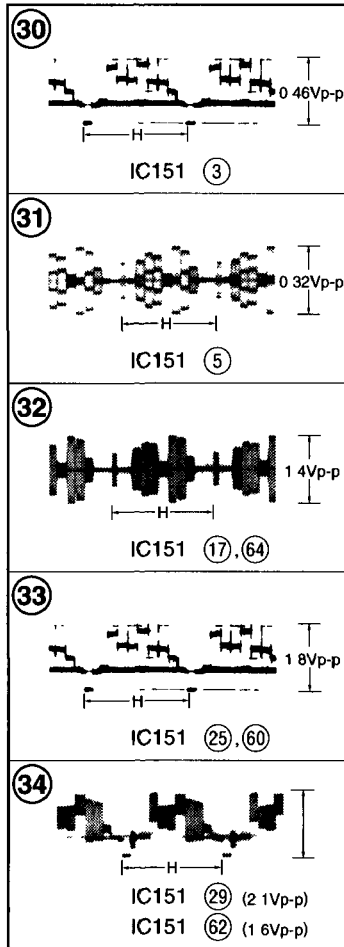
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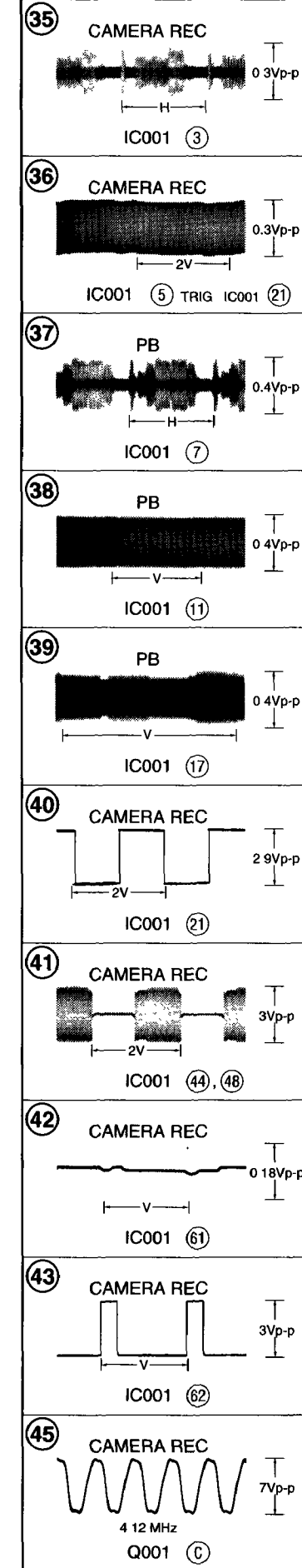
VC-195 BOARD (3/10)
Y/C PROCESSOR (CL BLOCK)



VC-195 BOARD (4/10)
CAMERA REC

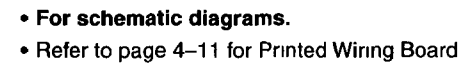


VC-195 BOARD (5/10)



REC/PB HEAD AMP
VC-195 (5/10)

4-31



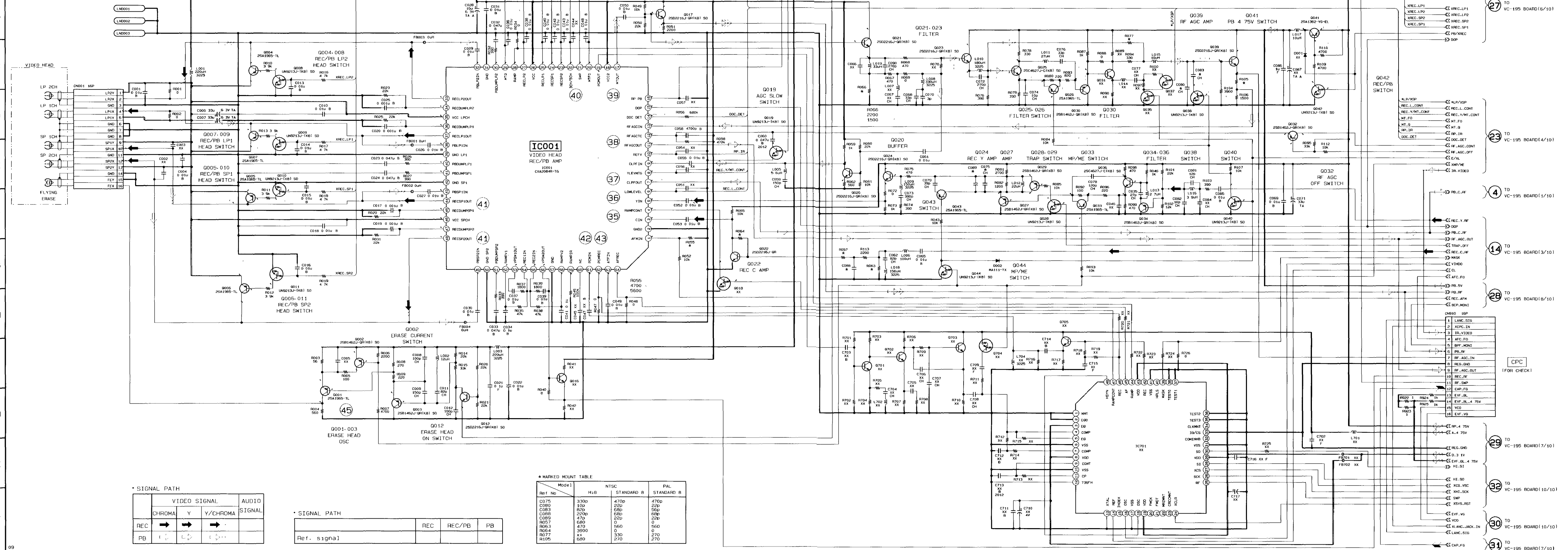
VC-195 BOARD(5/10)

REC/PB HEAD AMP(RR BLOCK)

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-REF NO      1.000 SERIES
XX MARK      NO MOUNT

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★ MARKED MOUNT TABLE

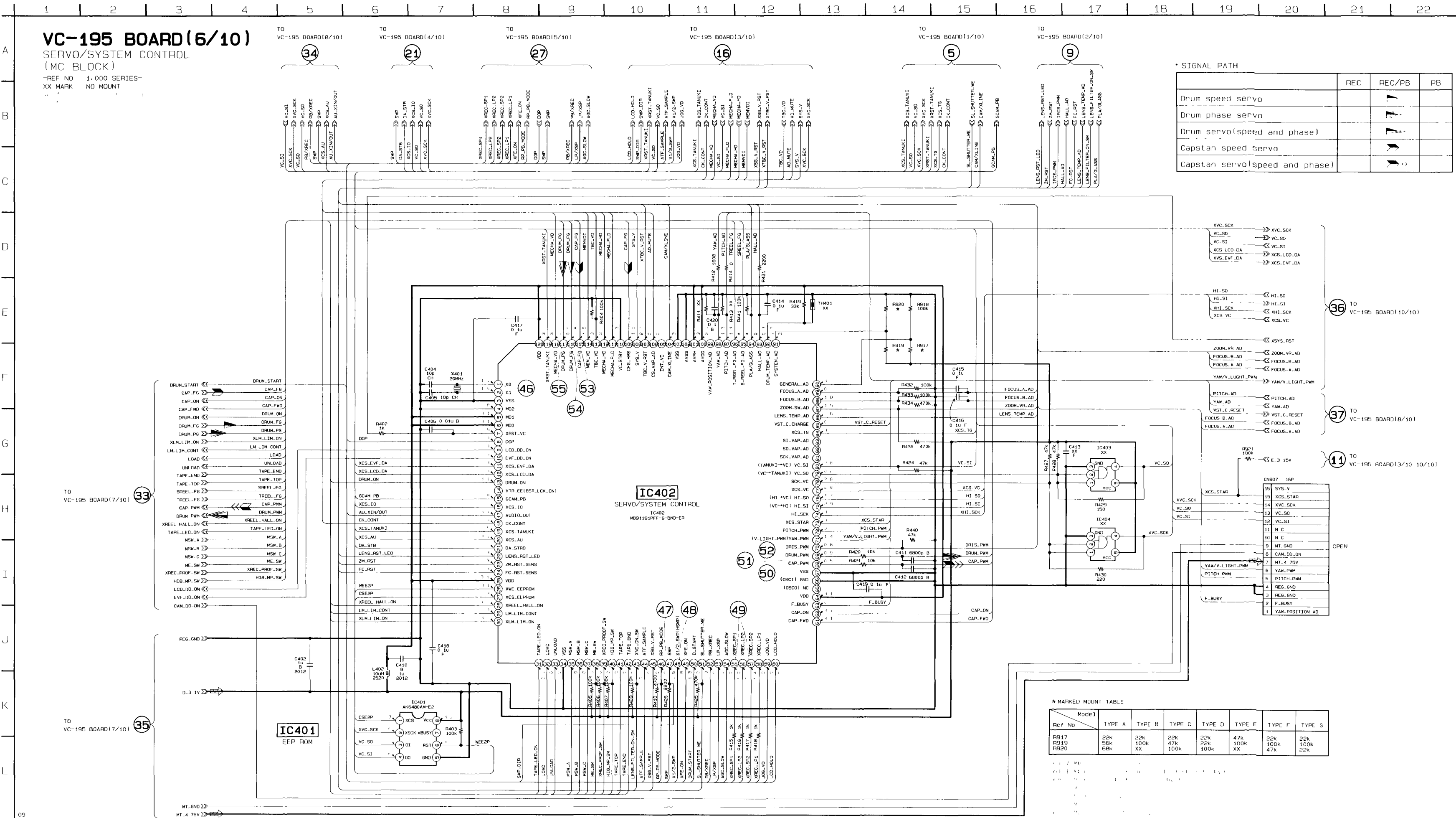
Model Ref. No	NTSC		PAL
	H1B	STANDARD B	STANDARD B
C075	330p	470p	470p
C080	10p	22p	22p
C083	82p	58p	56p
C088	220p	68p	69p
C089	47p	22p	22p
R057	69p	0	0
R063	47p	56p	56p
R064	390p	0	0
R077	x x	33p	27p
R105	58p	27p	27p

4-32

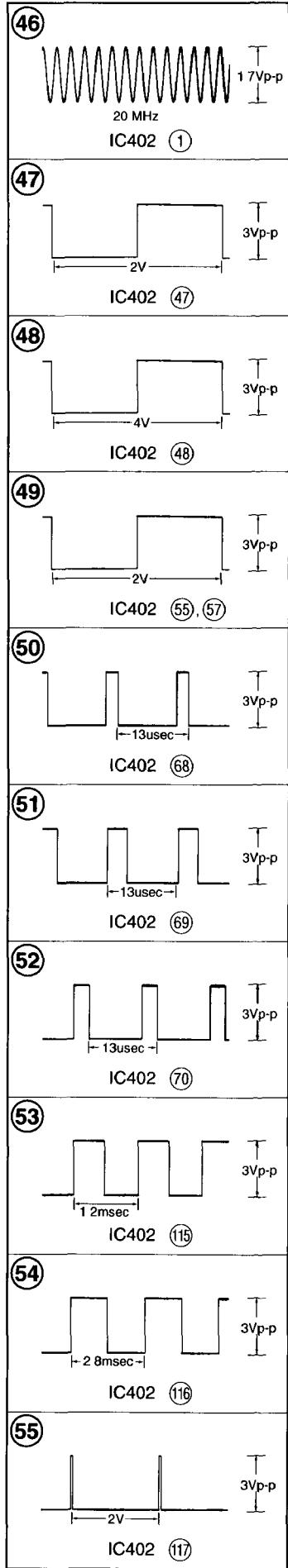
4-33

4-34

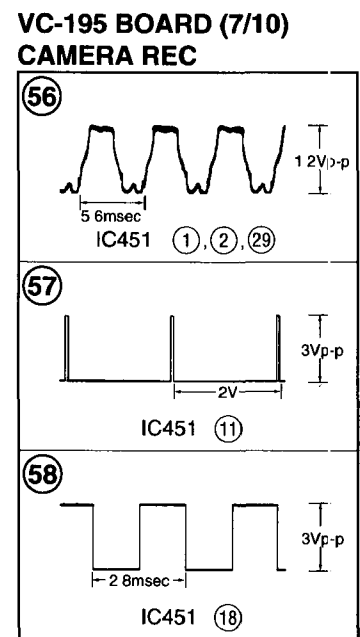
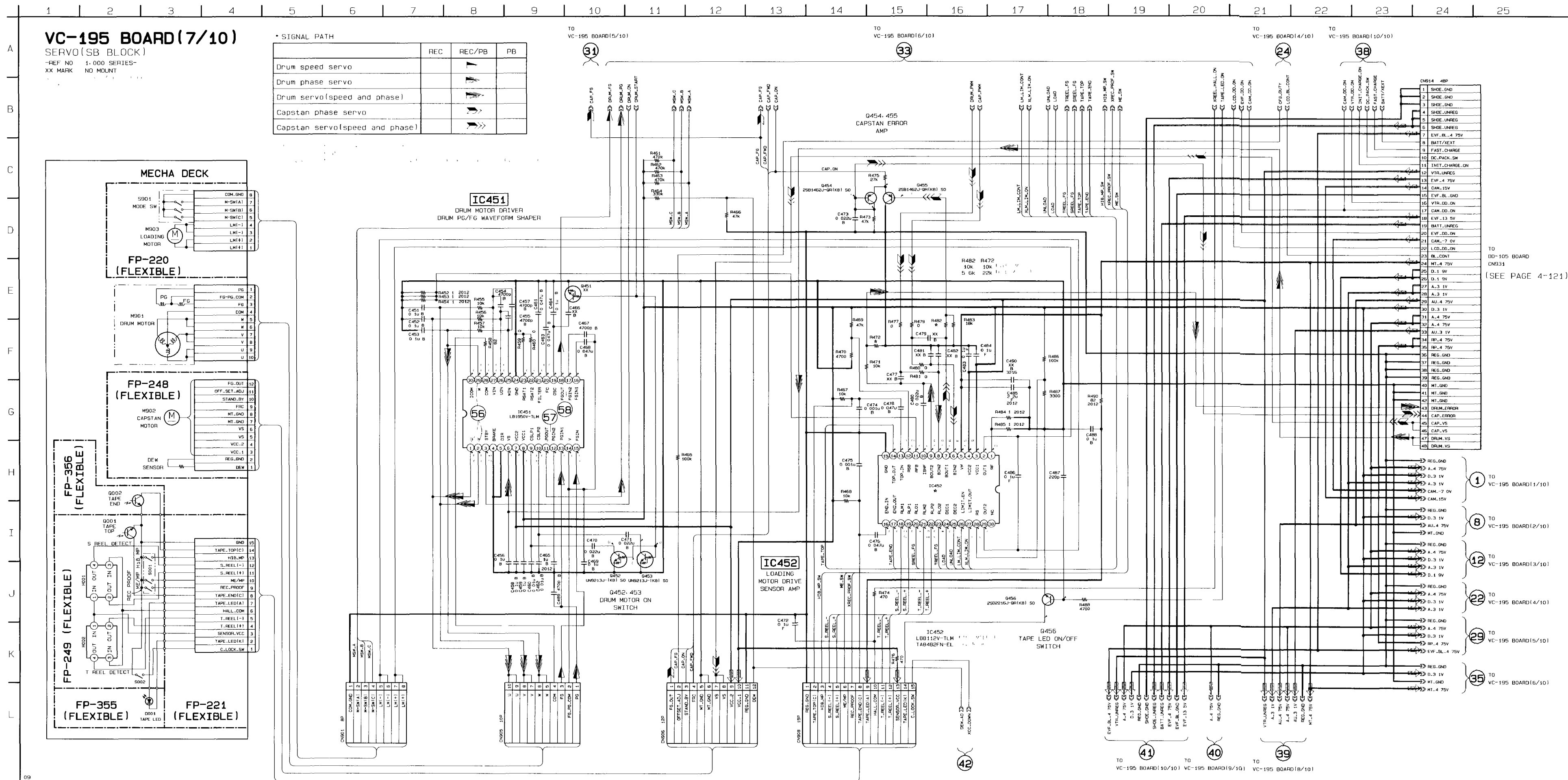
- For schematic diagrams.
- Refer to page 4-11 for Printed Wiring Board.



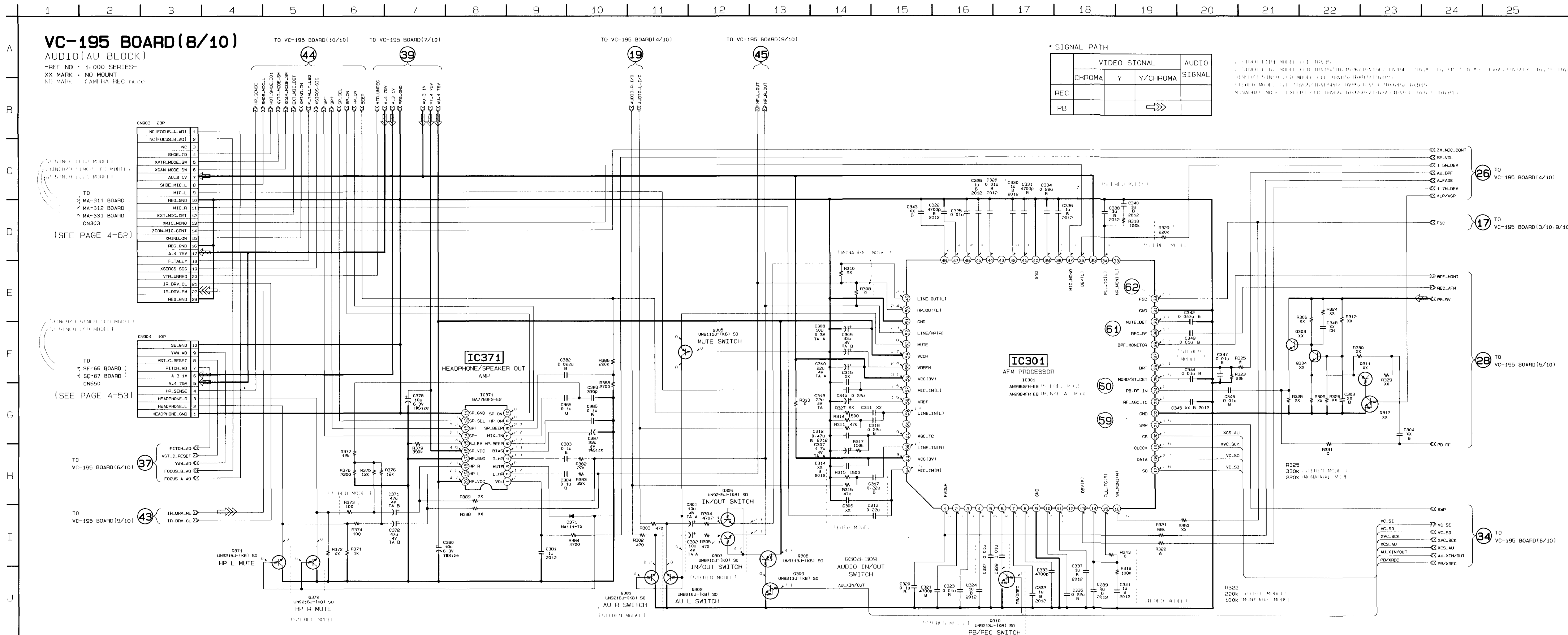
VC-195 BOARD (6/10)
CAMERA REC



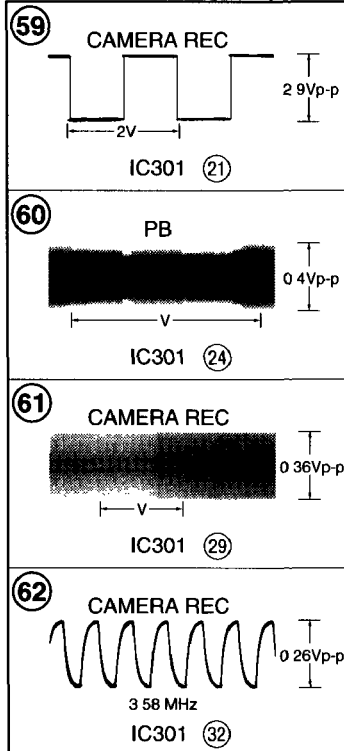
- **For schematic diagrams.**
- Refer to page 4–11 for Printed Wiring Board.



- For schematic diagrams.
- Refer to page 4-11 for Printed Wiring Board.

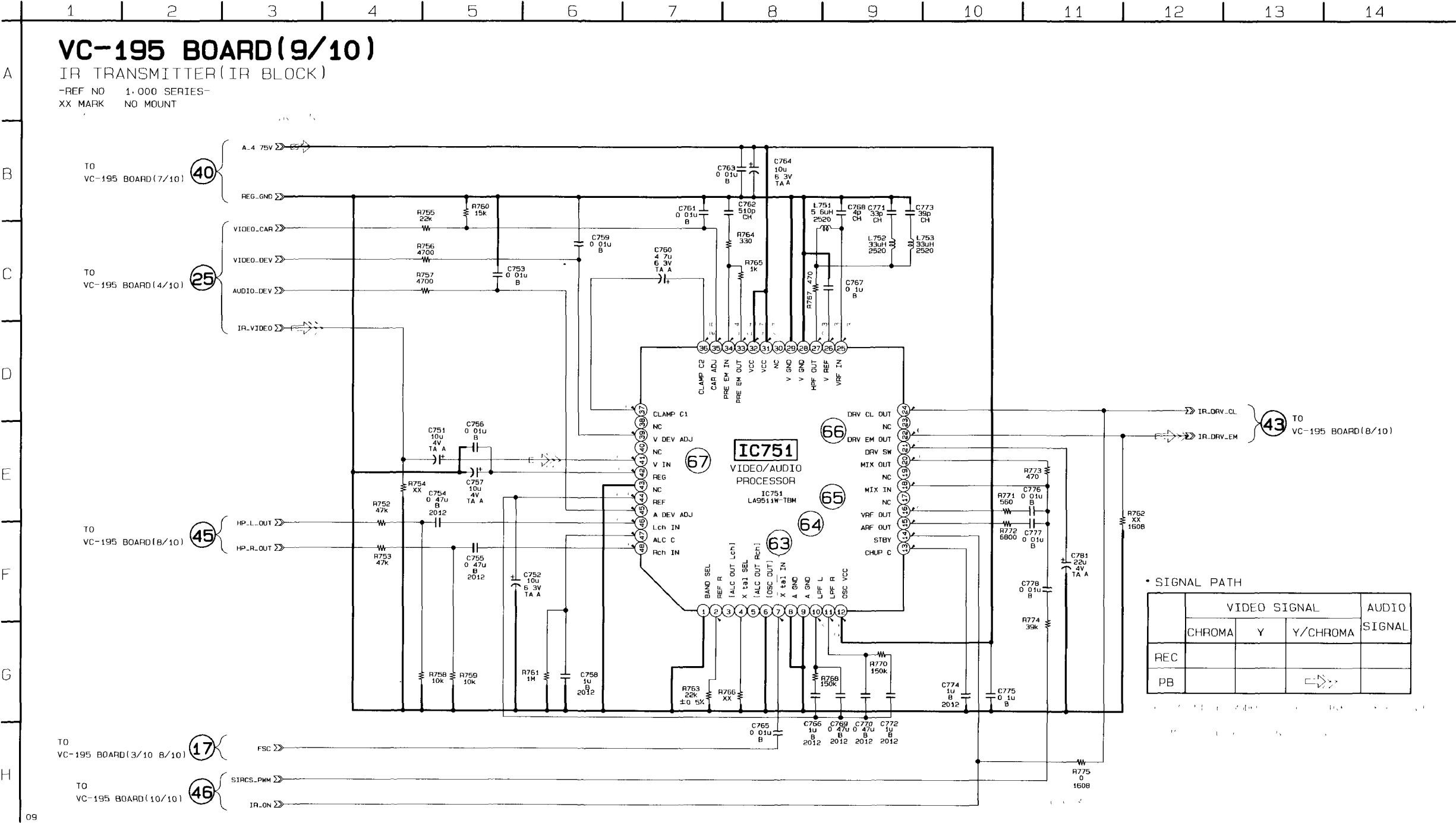
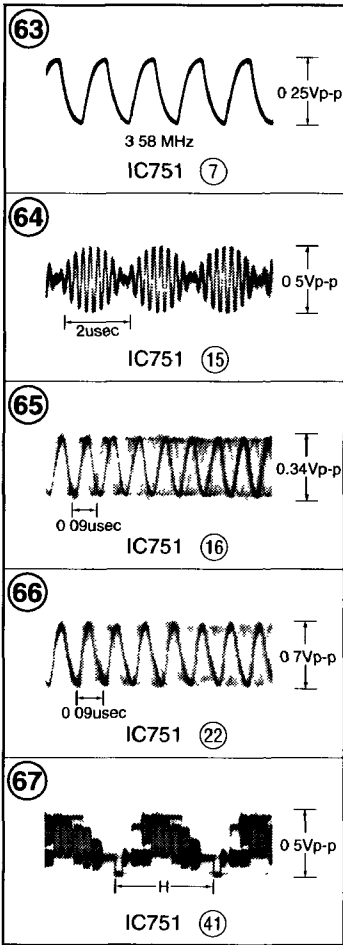


VC-195 BOARD (8/10)

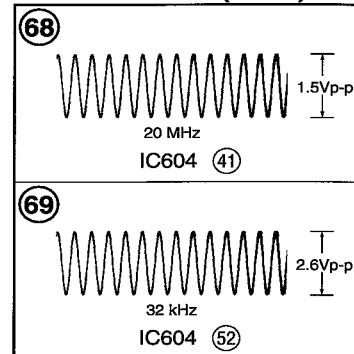


- For schematic diagrams.
- Refer to page 4-11 for Printed Wiring Board

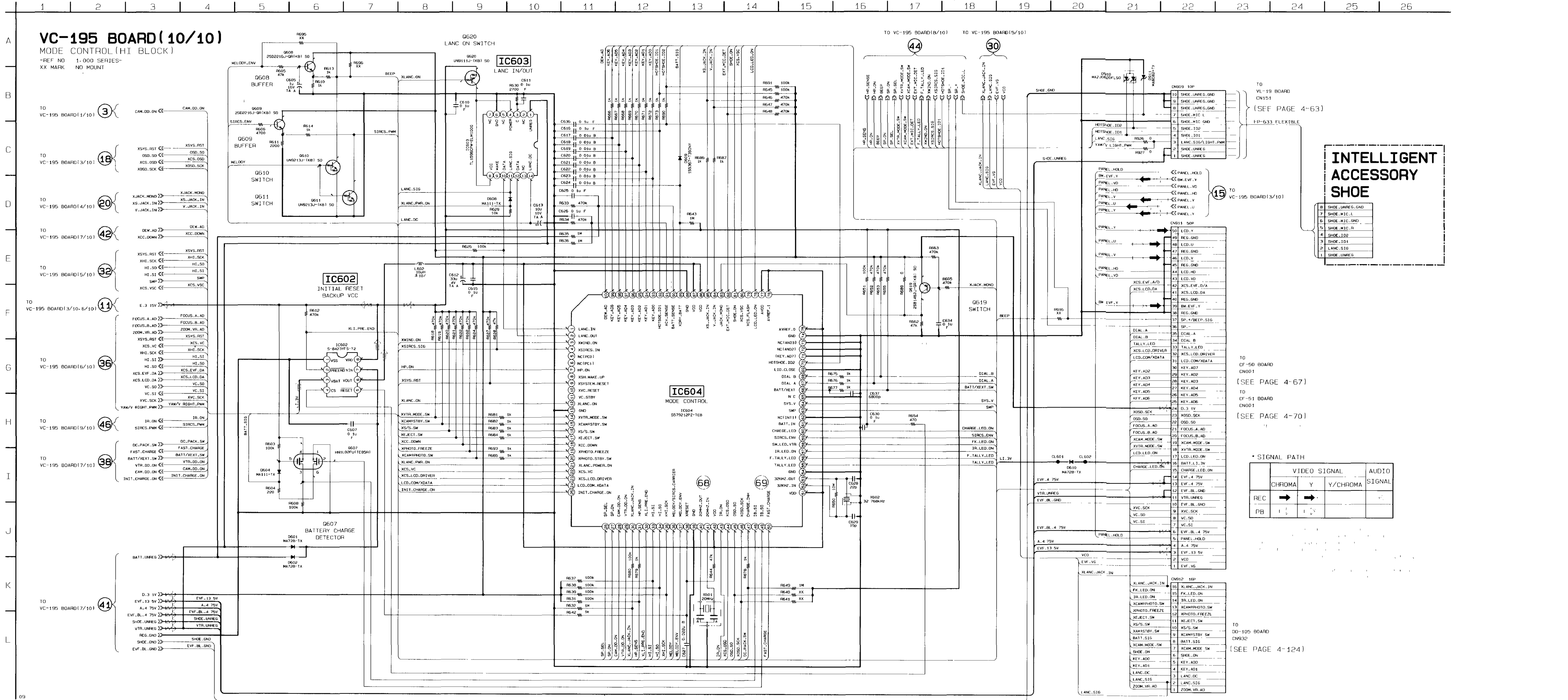
VC-195 BOARD (9/10)
PB



VC-195 BOARD (10/10)

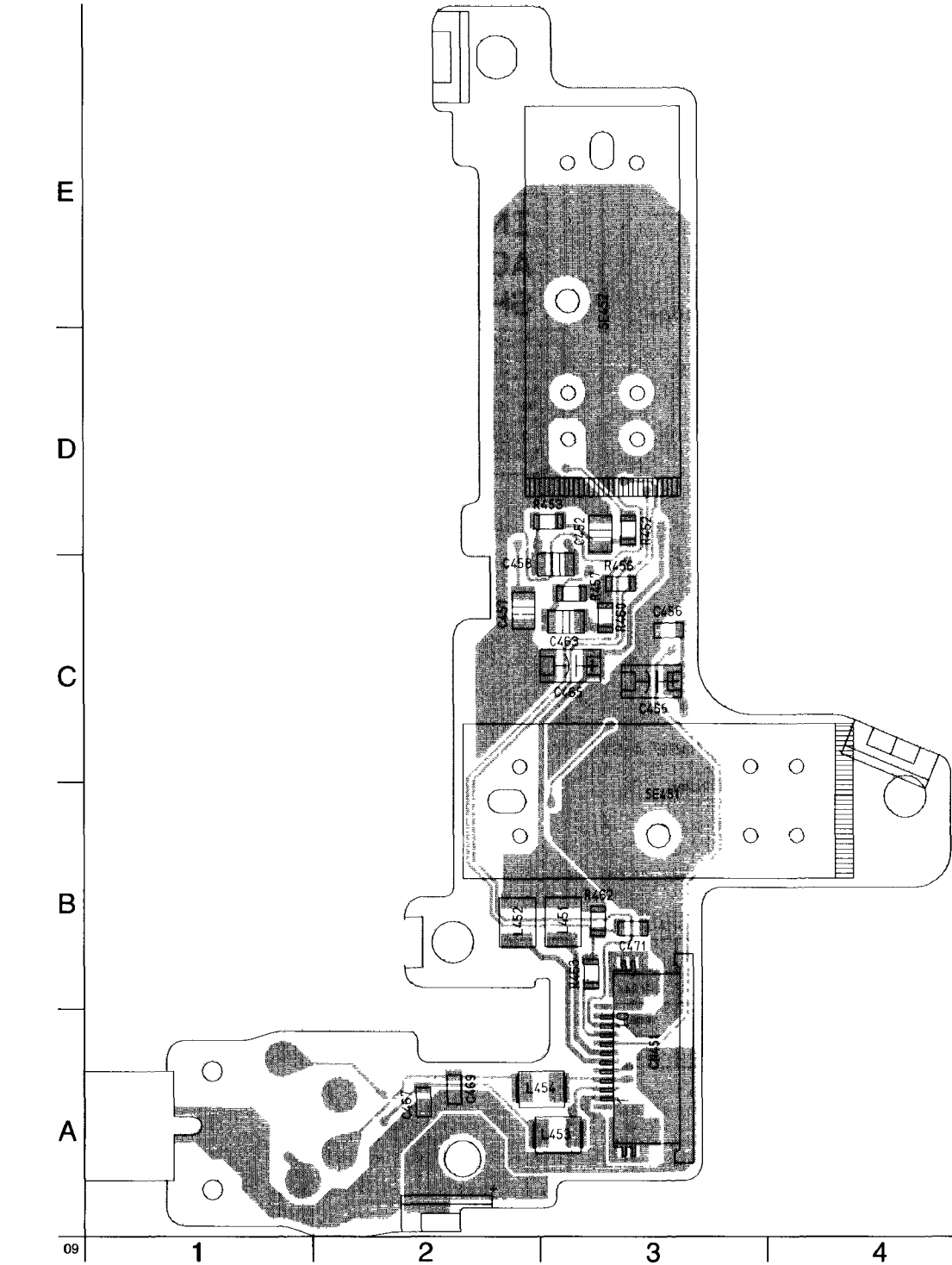


- For schematic diagrams.
- Refer to page 4-11 for Printed Wiring Board
- Refer to page 4-48 for Waveforms

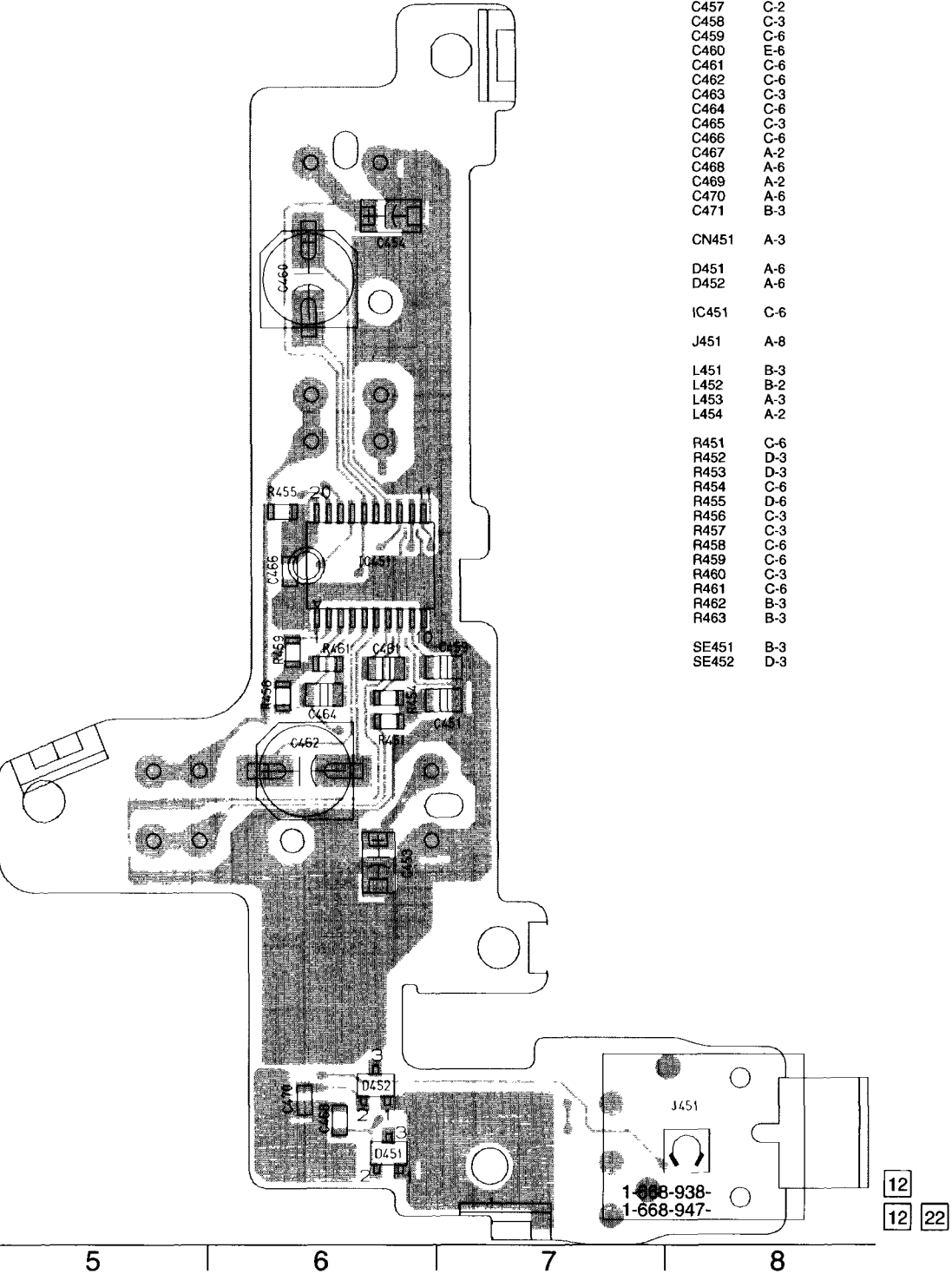


SE-66/67 (STEADY SHOT) (2.5 INCH LCD, 3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD
-Ref No SE-66 BOARD 4,000 series, SE-67 BOARD 9,000 series -

SE-67 BOARD (SIDE B)
SE-66 BOARD (SIDE B)



SE-67 BOARD (SIDE A)
SE-66 BOARD (SIDE A)



SE-66
SE-67 BOARD

- C451 C-6
- C452 D-3
- C453 B-6
- C454 E-6
- C455 C-3
- C456 C-3
- C457 C-2
- C458 C-3
- C459 C-6
- C460 E-6
- C461 C-6
- C462 C-6
- C463 C-3
- C464 C-6
- C465 C-3
- C466 C-6
- C467 A-2
- C468 A-6
- C469 A-2
- C470 A-6
- C471 B-3

- CN451 A-3
- D451 A-6
- D452 A-6

- IC451 C-6

- J451 A-8
- L451 B-3
- L452 B-2
- L453 A-3
- L454 A-2

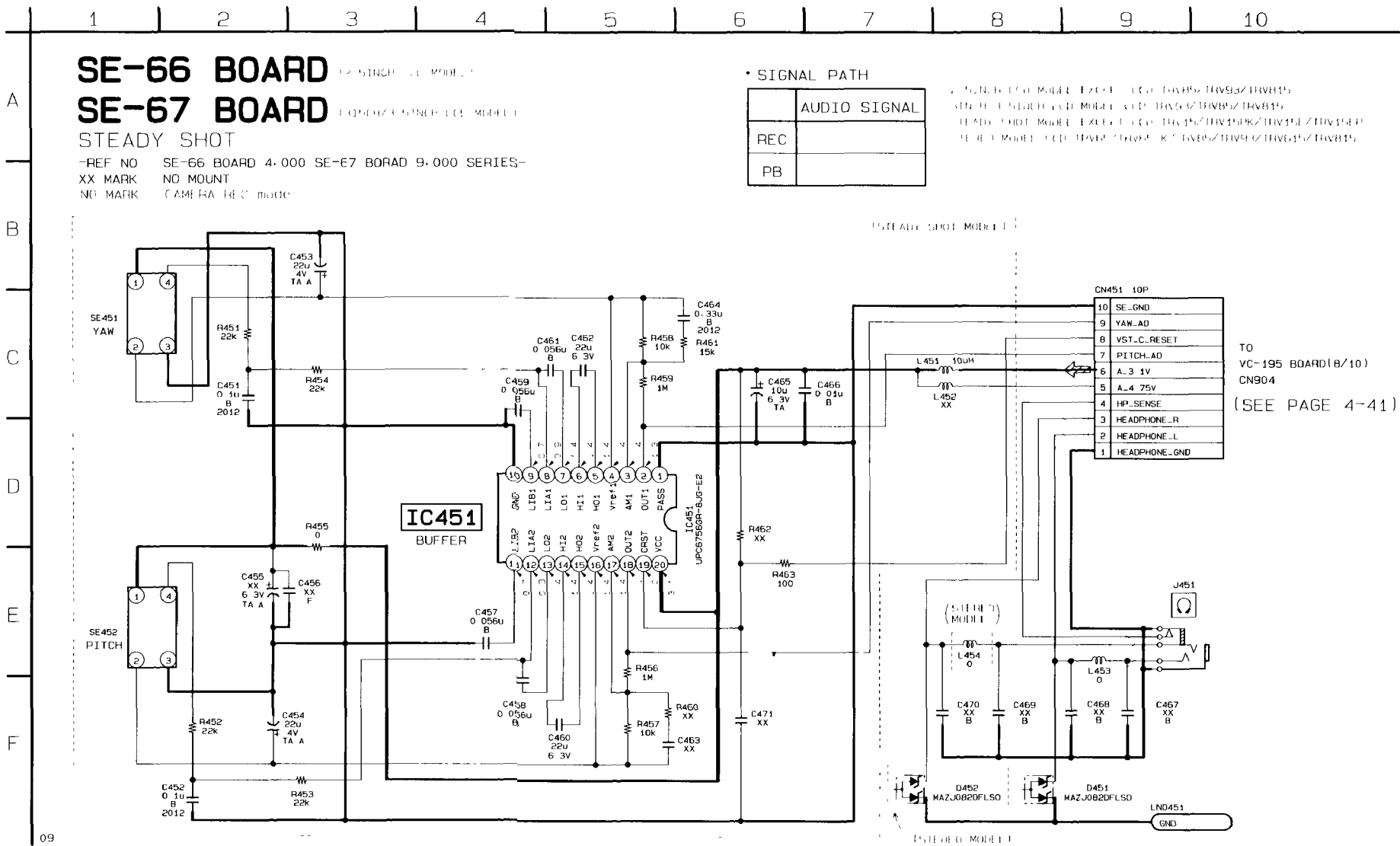
- R451 C-6
- R452 D-3
- R453 D-3
- R454 C-6
- R455 D-6
- R456 C-3
- R457 C-3
- R458 C-6
- R459 C-6
- R460 C-3
- R461 C-6
- R462 B-3
- R463 B-3

- SE451 B-3
- SE452 D-3

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip diode



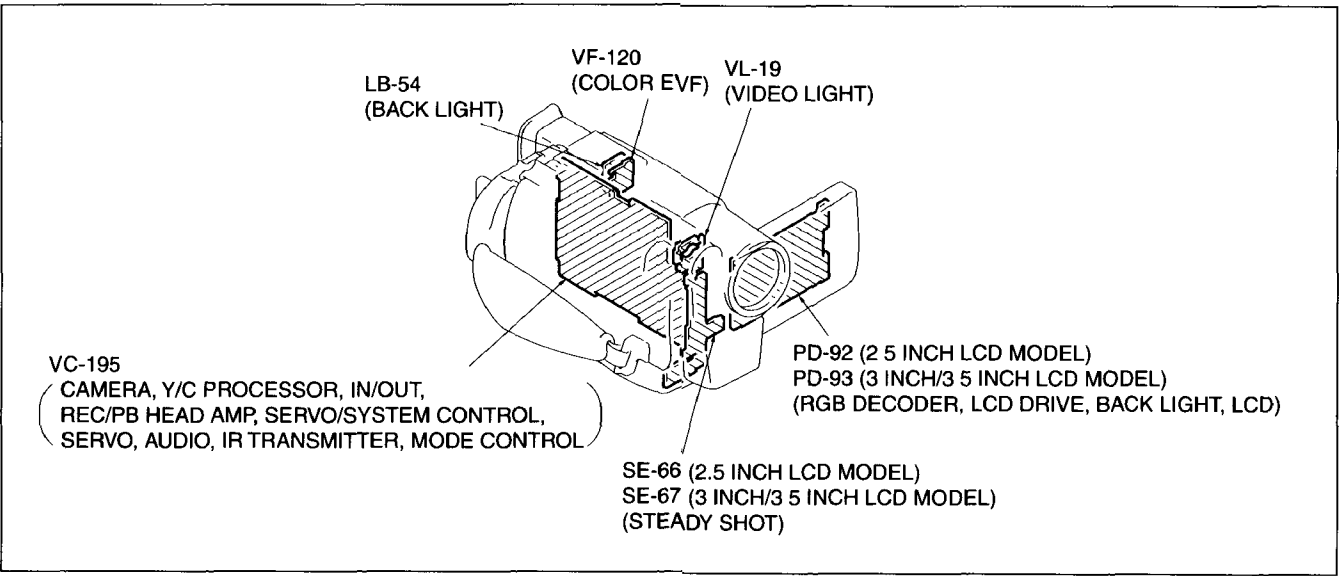
SE-66 BOARD
SE-67 BOARD

STEADY SHOT
-REF NO SE-66 BOARD 4,000 SE-67 BOARD 9,000 SERIES-
XX MARK NO MOUNT
NO MARK CAMERA 14 C model

* SIGNAL PATH

	AUDIO SIGNAL
REC	
PB	

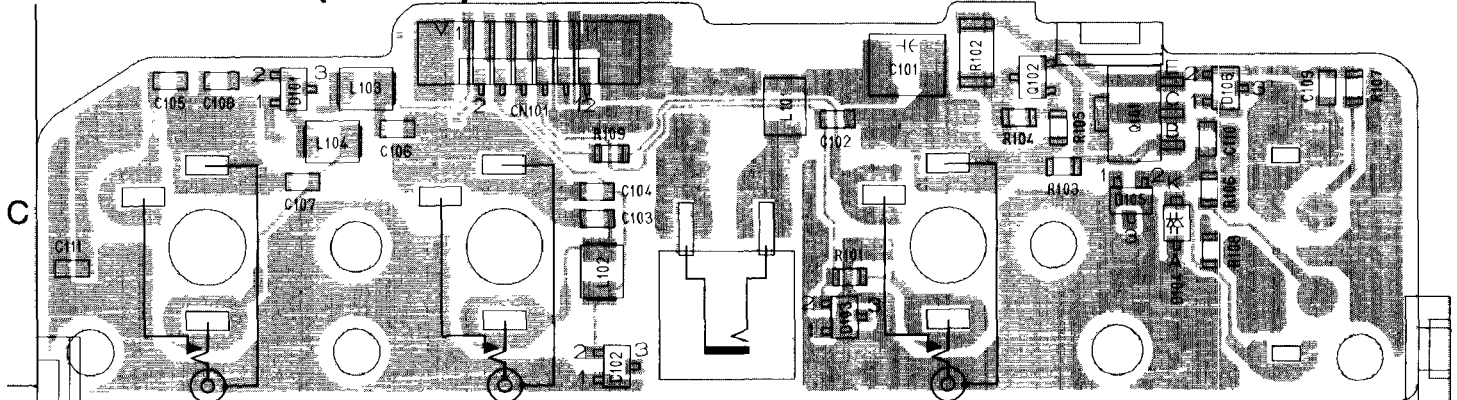
VC-195 BOARD (18/10) CN904
(SEE PAGE 4-41)



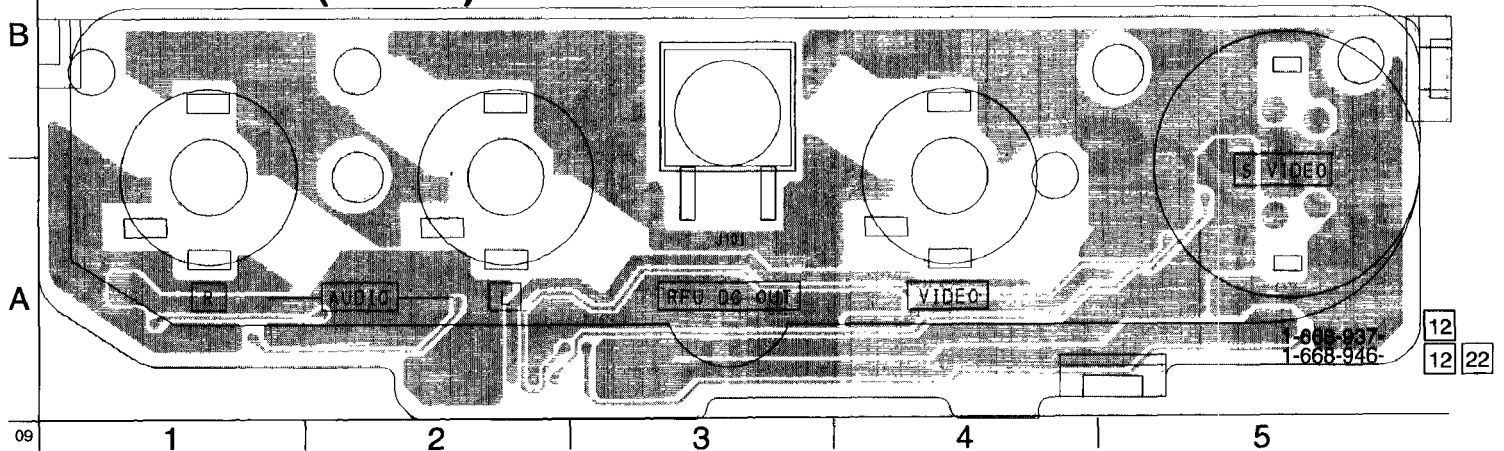
PJ-83/84 (AV IN/OUT) (2.5 INCH LCD, 3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD

– Ref No PJ-83 BOARD: 4,000 series, PJ-84 BOARD: 9,000 series –

PJ-84 BOARD (SIDE B) **PJ-83 BOARD (SIDE B)**



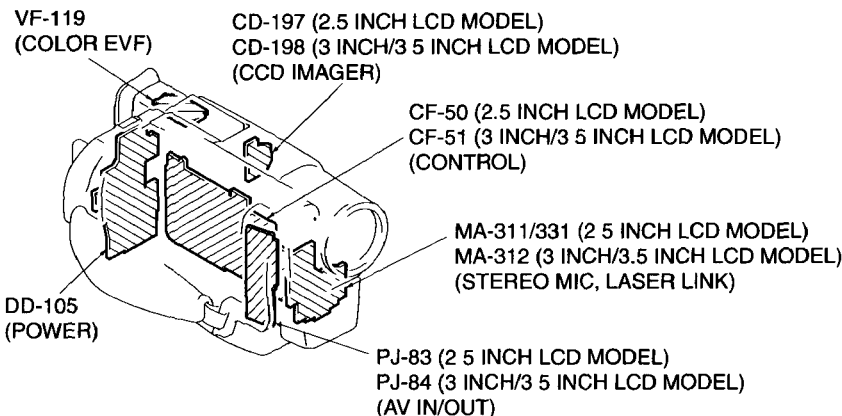
PJ-84 BOARD (SIDE A) **PJ-83 BOARD (SIDE A)**



• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip diode



PJ-83
PJ-84 BOARD

C101 C-4
C102 C-4
C103 C-3
C104 C-3
C105 C-1
C106 C-2
C107 C-1
C108 C-1
C109 C-5
C110 C-5
C111 C-1

CN101 C-2

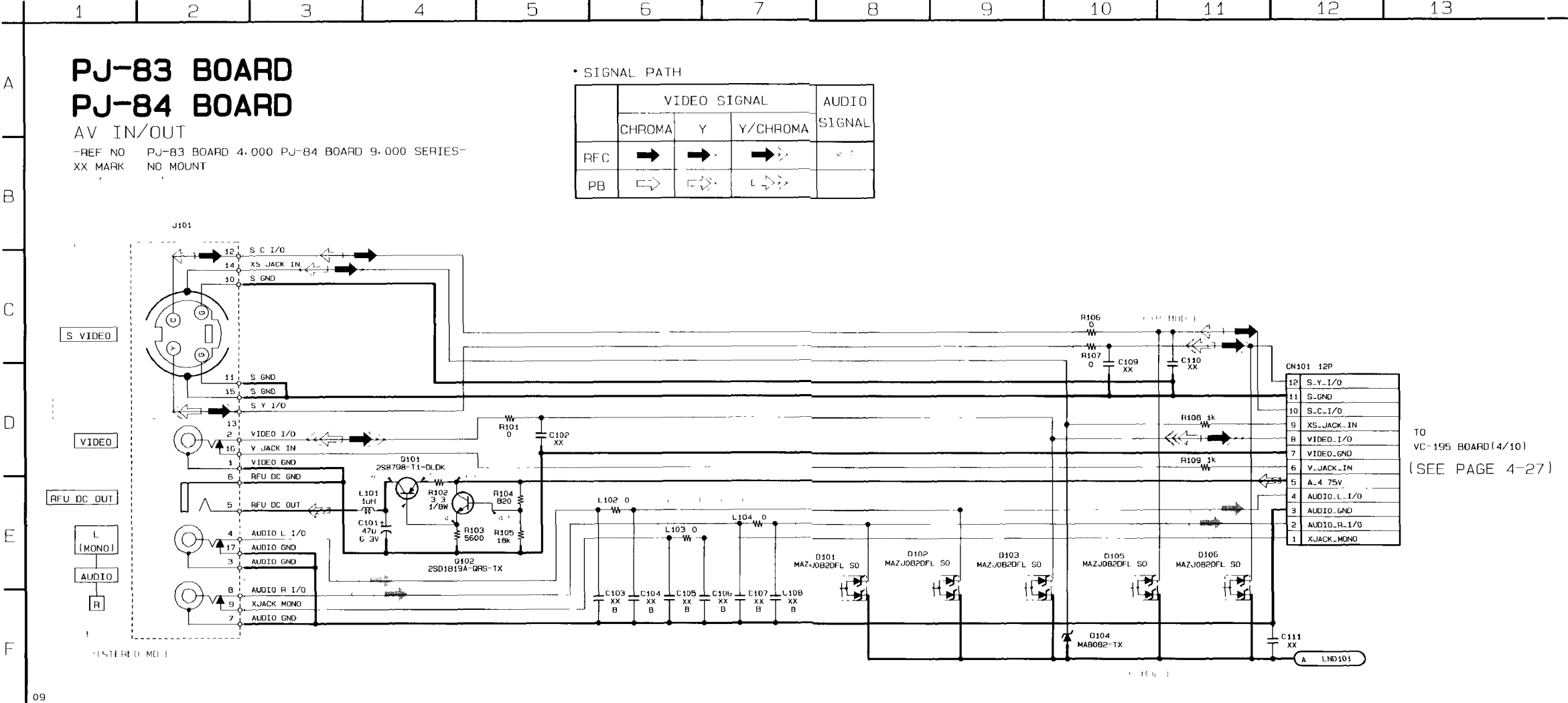
D101 C-1
D102 C-3
D103 C-4
D105 C-5
D106 C-5
D107 C-5

J101 A-3

L101 C-3
L102 C-3
L103 C-2
L104 C-2

Q101 C-5
Q102 C-4

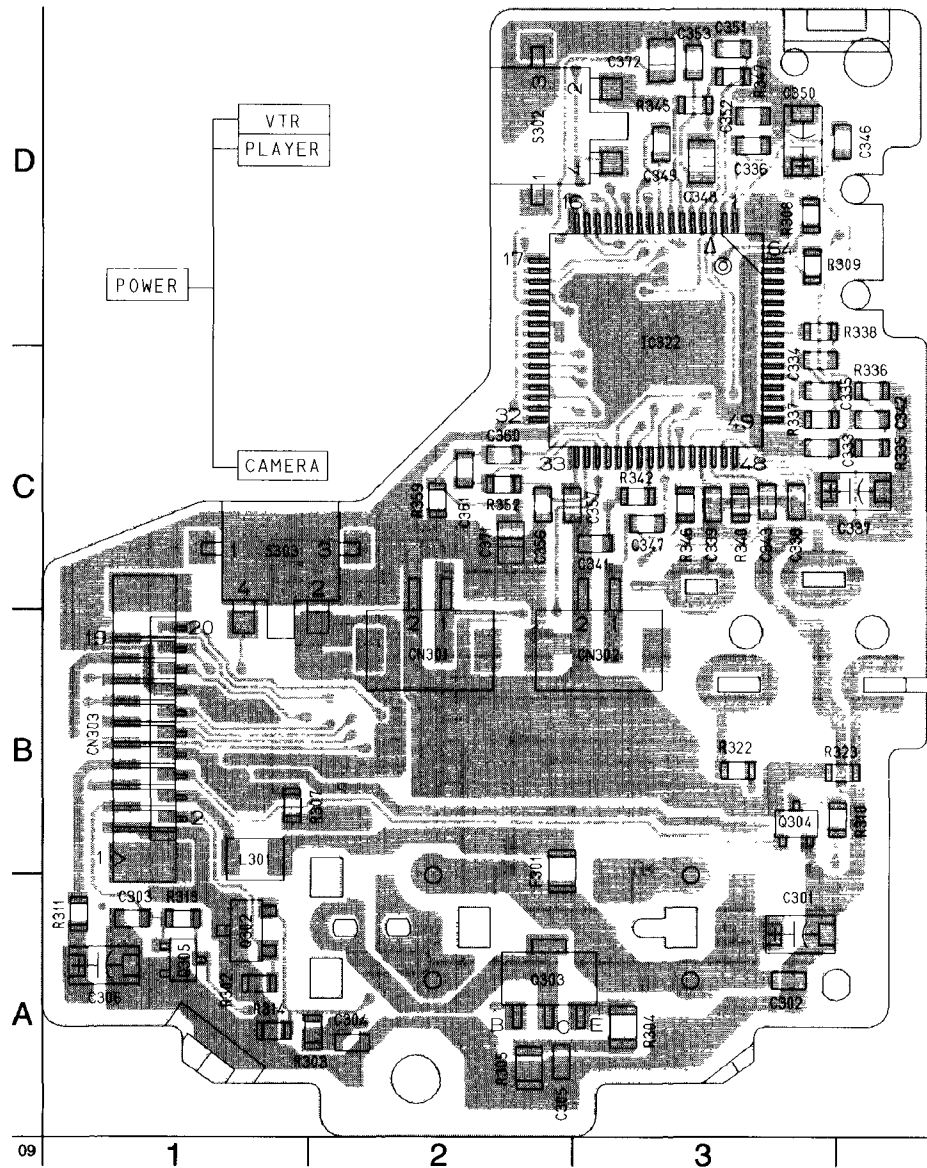
R101 C-4
R102 C-4
R103 C-4
R104 C-4
R105 C-4
R106 C-5
R107 C-5
R108 C-5
R109 C-3



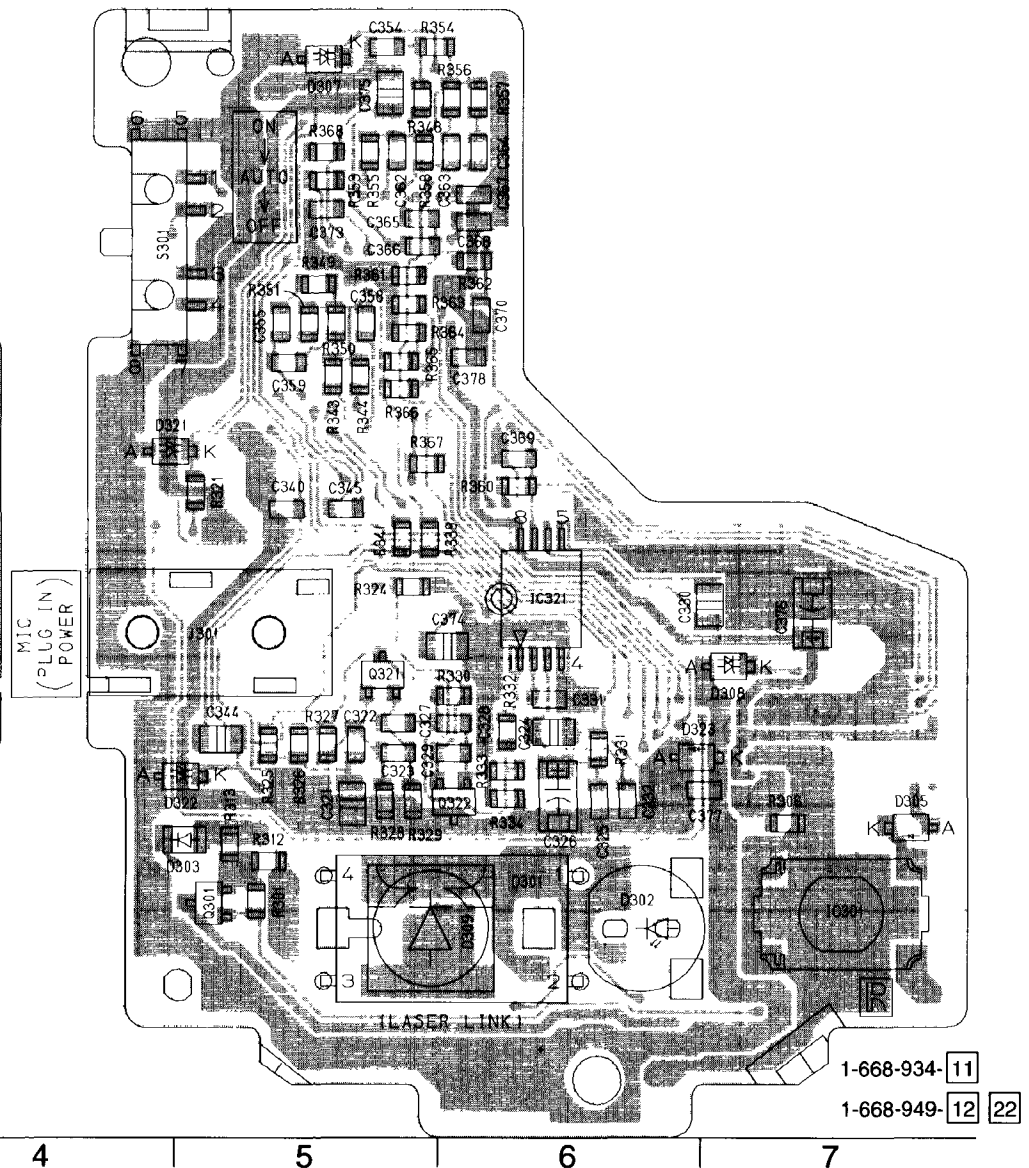
CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

MA-311/331 (STEREO MIC, LASER LINK) (2.5 INCH LCD MODEL) PRINTED WIRING BOARDS
- Ref No MA-311 BOARD: 3,000 series, MA-331 BOARD 4,000 series -

MA-311/331 BOARD (SIDE B)



MA-311/331 BOARD (SIDE A)



1-668-934-11
1-668-949-12 22

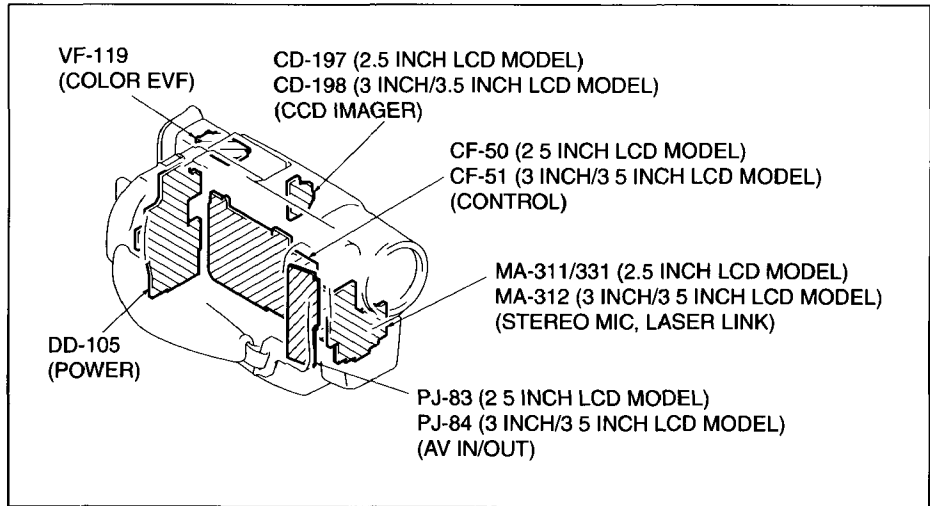
MA-331
MA-311 BOARD

C301	A-3	C344	B-5	C373	D-5	Q301	A-5	R327	B-5	R356	D-6
C302	A-3	C345	C-5	C374	B-6	Q302	A-1	R328	B-5	R357	D-6
C303	A-1	C346	D-4	C375	D-5	Q303	A-2	R329	B-5	R358	D-5
C304	A-2	C347	C-3	C376	B-7	Q304	B-3	R330	B-6	R359	C-2
C305	A-2	C348	D-3	C377	B-6	Q305	A-1	R331	B-6	R360	C-6
C306	A-1	C349	D-3	C378	C-6	Q321	B-5	R332	B-6	R361	D-5
C321	B-5	C350	D-3			Q322	B-6	R333	B-6	R362	D-6
C322	B-5	C351	D-3	CN301	B-2			R334	B-6	R363	D-5
C323	B-5	C352	D-3	CN302	B-3	R301	A-5	R335	C-4	R364	D-5
C324	B-6	C353	D-3	CN303	B-1	R302	A-1	R336	C-4	R365	C-5
C325	B-6	C354	D-5			R303	A-2	R337	C-3	R366	C-5
C326	B-6	C355	D-5	D301	A-6	R304	A-3	R338	D-3	R367	C-5
C327	B-5	C356	C-2	D302	A-6	R305	A-2	R339	C-5	R368	D-5
C328	B-6	C357	C-2	D303	B-5	R306	B-7	R340	C-3		
C329	B-6	C358	D-5	D305	B-7	R307	B-1	R341	C-5		
C330	C-7	C359	C-5	D307	D-3	R308	D-3	R342	C-3		
C331	B-6	C360	D-2	D308	B-7	R309	D-3	R343	C-3		
C332	B-6	C361	C-2	D309	A-5	R310	B-3	R344	C-5		
C333	C-3	C362	D-5	D322	B-5	R311	A-1	R345	D-3		
C334	C-3	C363	D-6	D323	B-6	R312	B-5	R346	C-3		
C335	C-3	C364	D-6			R313	B-5	R347	D-3		
C336	D-3	C365	D-5	IC301	A-7	R314	A-1	R348	D-5		
C337	C-4	C366	D-5	C321	C-1	R315	A-1	R349	D-5		
C338	C-4	C367	D-6	IC322	D-3	R321	C-5	R350	D-5		
C339	C-3	C368	D-6			R322	B-3	R351	D-5		
C340	C-5	C369	C-6	J310	B-5	R323	A-4	R352	C-2		
C341	C-4	C370	D-6			R324	C-5	R353	D-5		
C342	C-4	C371	C-2	L301	B-1	R325	B-5	R354	D-5		
C343	C-3	C372	D-3			R326	B-5	R355	D-5		

• For Printed Wiring Boards.

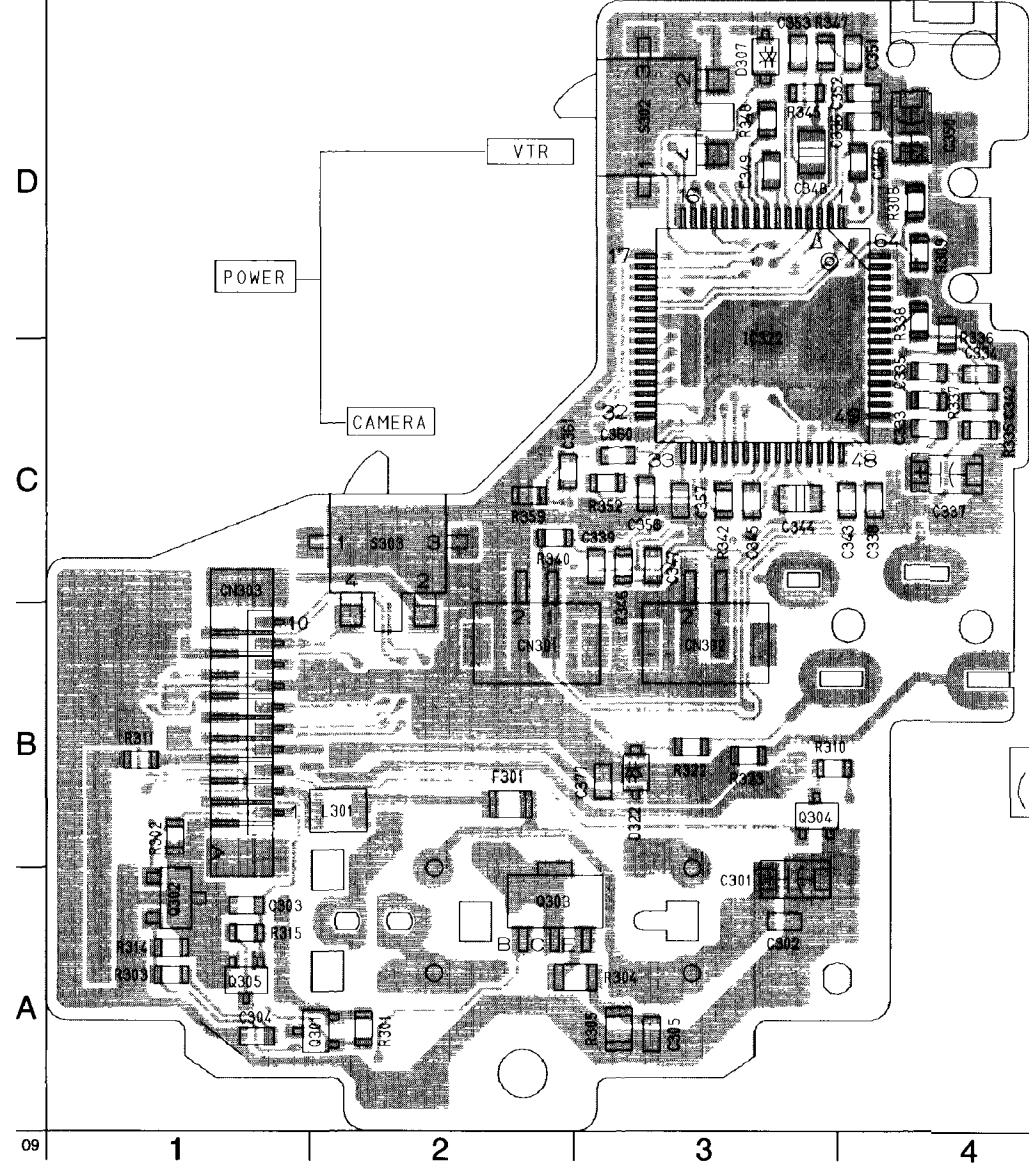
There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor

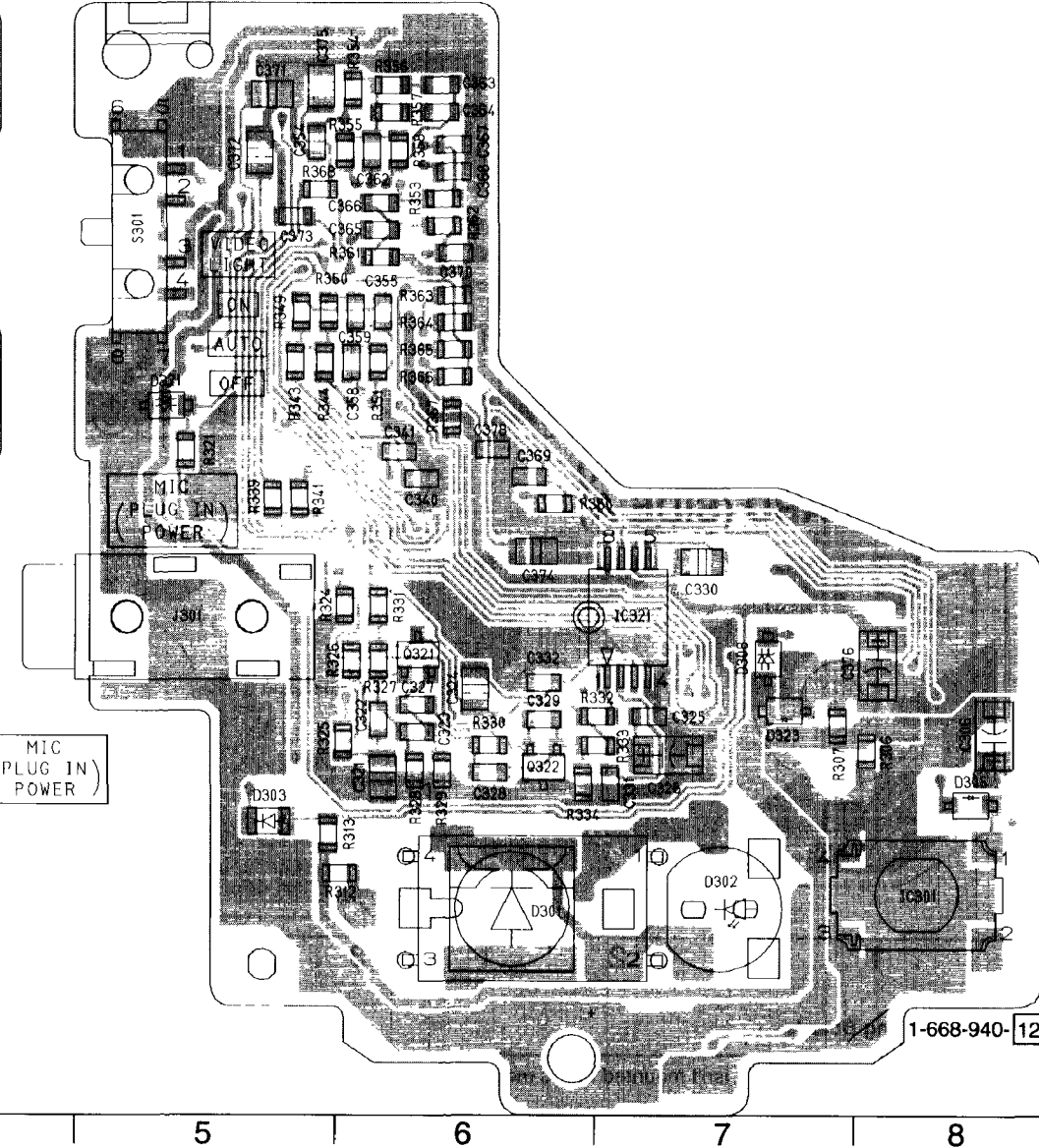


MA-312 (STEREO MIC, LASER LINK) (3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD
- Ref No MA-312 BOARD: 9,000 series -

MA-312 BOARD (SIDE B)



MA-312 BOARD (SIDE A)



1-668-940-12

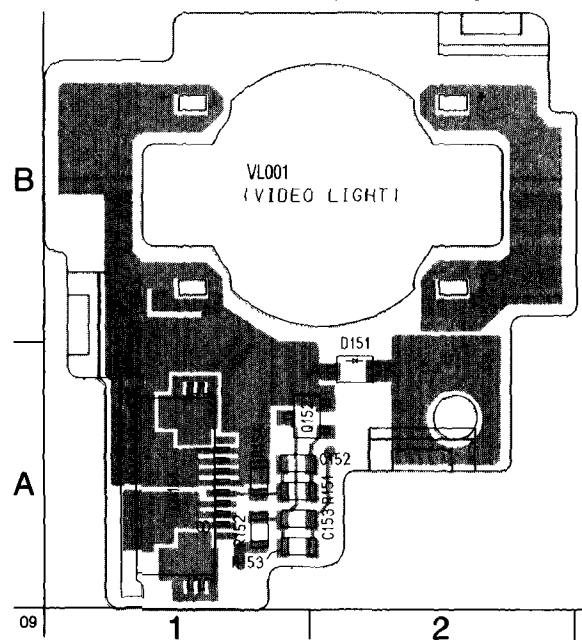
MA-312 BOARD

C301	A-3	C345	C-3	C375	D-5	Q302	A-1	R329	B-6	R359	C-2
C302	A-3	C346	D-4	C376	B-8	Q303	A-2	R330	B-6	R360	C-6
C303	A-1	C347	C-3	C377	B-3	Q304	B-3	R331	B-6	R361	D-6
C304	A-1	C348	D-3	C378	C-6	Q305	A-1	R332	B-7	R362	D-6
C305	A-3	C349	D-3			Q321	B-6	R333	B-7	R363	D-6
C306	B-8	C350	D-4	CN301	B-2	Q322	B-6	R334	B-6	R364	D-6
C321	B-6	C351	D-4	CN302	B-3			R335	C-4	R365	C-6
C322	B-6	C352	D-4	CN303	B-1	R301	A-2	R336	D-4	R366	C-6
C323	B-6	C353	D-3			R302	B-1	R337	C-4	R367	C-6
C324	B-6	C354	D-5	D301	A-6	R303	A-1	R338	D-4	R368	D-5
C325	B-7	C355	D-6	D302	A-7	R304	A-3	R339	C-5		
C326	B-7	C356	C-3	D303	B-5	R305	A-3	R340	C-5	S301	D-5
C327	B-6	C357	C-3	D305	B-8	R306	B-8	R341	C-5	S302	D-3
C328	B-6	C358	C-6	D307	D-3	R307	B-7	R342	C-3	S303	C-2
C329	B-6	C359	D-6	D308	B-7	R308	D-4	R343	C-5		
C330	C-7	C360	C-3	D321	C-5	R309	D-4	R344	C-5		
C331	B-7	C361	C-2	D322	B-3	R310	B-3	R345	D-3		
C332	B-6	C362	D-6	D323	B-7	R311	B-1	R346	C-3		
C333	C-4	C363	D-6			R312	A-6	R347	D-3		
C334	C-4	C364	D-6	F301	B-2	R313	B-6	R348	D-3		
C335	C-4	C365	D-6			R314	A-1	R349	D-5		
C336	D-4	C366	D-6	IC301	A-8	R315	A-1	R350	D-5		
C337	C-4	C367	D-6	IC321	C-7	R321	C-5	R351	D-6		
C338	C-4	C368	D-6	IC332	C-3	R322	B-3	R352	D-6		
C339	C-3	C369	C-6			R323	B-3	R353	C-3		
C340	C-6	C370	D-6	J301	B-5	R324	B-6	R354	D-6		
C341	C-6	C371	D-5			R325	B-6	R355	D-6		
C342	C-4	C372	D-5	L301	B-2	R326	B-6	R356	D-6		
C343	C-4	C373	D-5			R327	B-6	R357	D-6		
C344	C-3	C374	C-6	Q301	A-2	R328	B-6	R358	D-6		

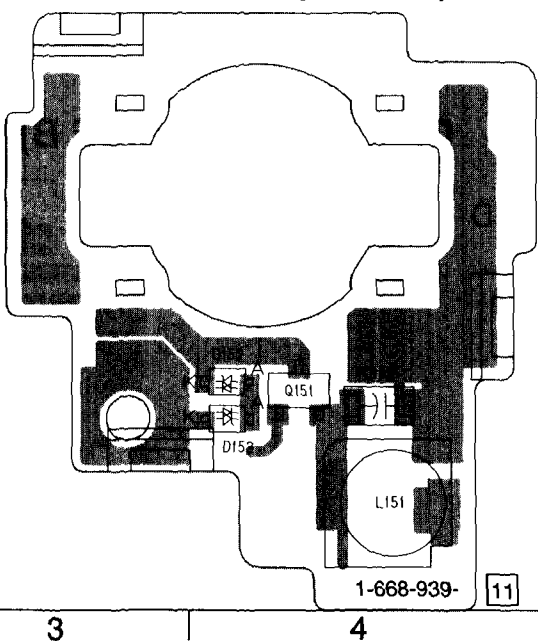
VL-19 (VIDEO LIGHT) PRINTED WIRING BOARD
- Ref No VL-19 BOARD 9,000 series -

- VL-19 BOARD
- C151 A-4
 - C152 A-1
 - C153 A-1
 - CN151 A-1
 - D151 A-2
 - D152 A-4
 - D153 A-4
 - L151 A-4
 - Q151 A-4
 - Q152 A-1
 - R151 A-1
 - R152 A-1
 - R153 A-1
 - R154 A-1

VL-19 BOARD (SIDE B)



VL-19 BOARD (SIDE A)



VL-19 BOARD

VIDEO LIGHT

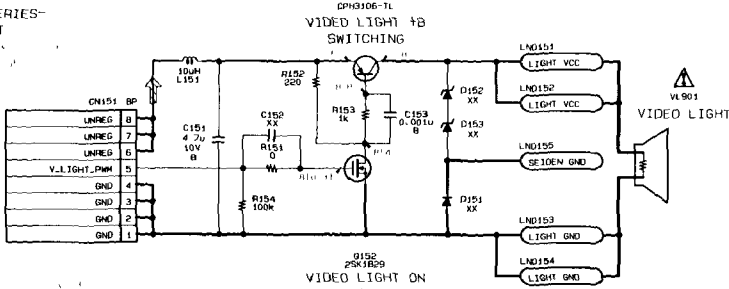
- REF NO 9,000 SERIES -

XX MARK NO MOUNT

VC-195 BOARD 10/101

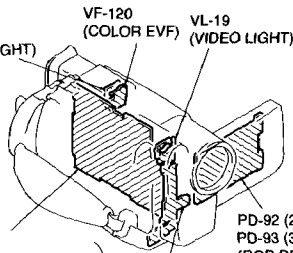
CN909

(SEE PAGE 4-51)



Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Note:
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.



VC-195
CAMERA, Y/C PROCESSOR, IN/OUT,
REC/PB HEAD AMP, SERVO/SYSTEM CONTROL,
SERVO, AUDIO, IR TRANSMITTER, MODE CONTROL

PD-92 (2.5 INCH LCD MODEL)
PD-93 (3 INCH/3.5 INCH LCD MODEL)
(RGB DECODER, LCD, LCD DRIVE, BACK LIGHT)

SE-66 (2.5 INCH LCD MODEL)
SE-67 (3 INCH/3.5 INCH LCD MODEL)
(STEADY SHOT)

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor



MA-311 BOARD
MA-312 BOARD
MA-331 BOARD

STEREO MIC, LASER LINK

- REF NO MA-311 BOARD 3 000

MA-312 BOARD 9 000

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

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MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

MA-331 BOARD 4 000 SERIES

• SIGNAL PATH

	VIDEO SIGNAL			AUDIO
	CHROMA	Y	Y/CHROMA	
REC				
PB				

Note:
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Ref No	Model	IR TRANSMITTER	NIGHT SHOT
C301	4 70	XX	XX
C302	0 10	XX	XX
C303	0 10	XX	XX
C304	0 10	XX	XX
C305	0 10	XX	XX
C306	0 10	XX	XX
C307	0 10	XX	XX
C308	0 10	XX	XX
C309	0 10	XX	XX
C310	0 10	XX	XX
C311	0 10	XX	XX
C312	0 10	XX	XX
C313	0 10	XX	XX
C314	0 10	XX	XX
C315	0 10	XX	XX

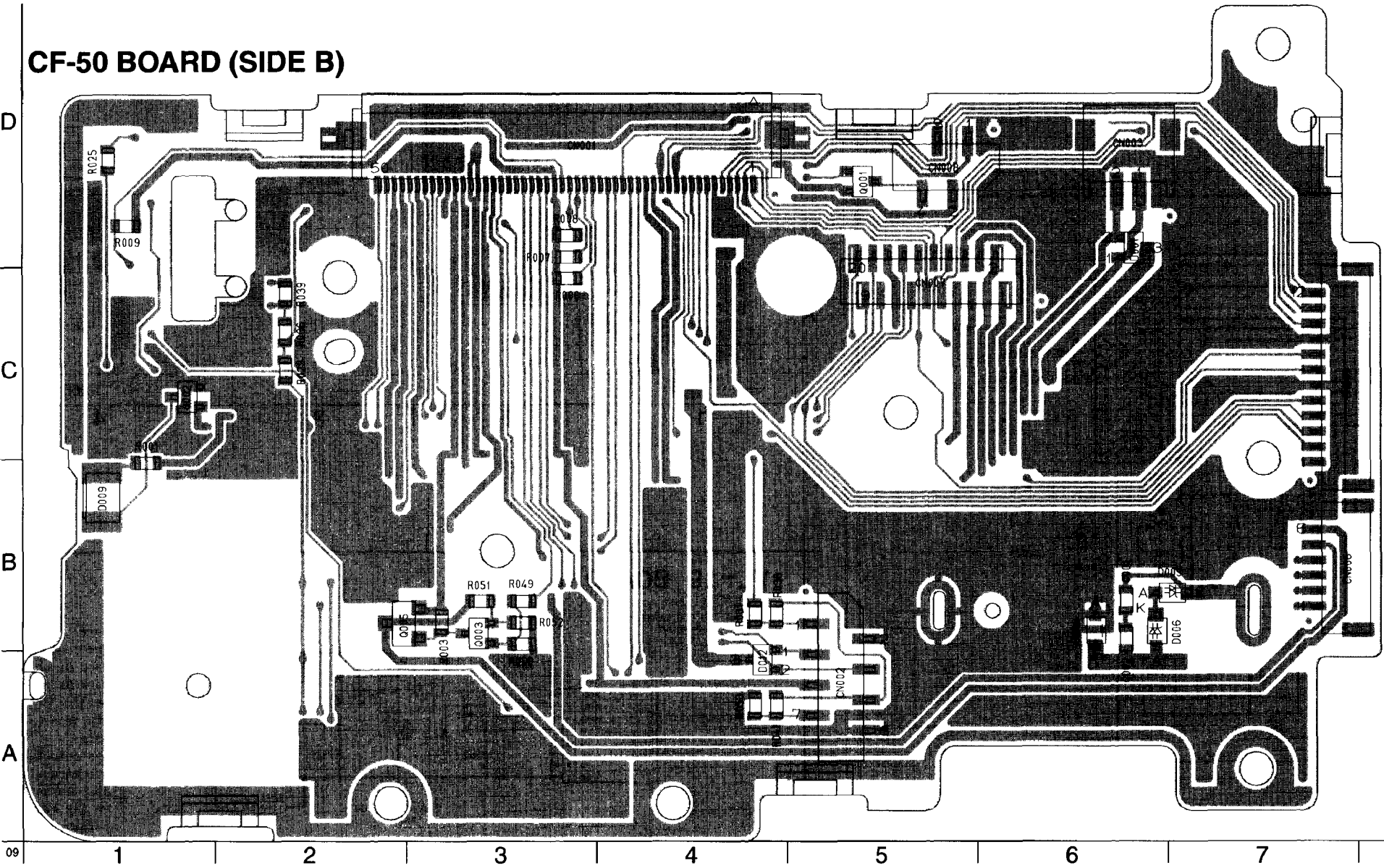
Note:
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

CF-50 (CONTROL (2.5 INCH LCD MODEL)) PRINTED WIRING BOARD
- Ref No. CF-50 BOARD 4,000 series -

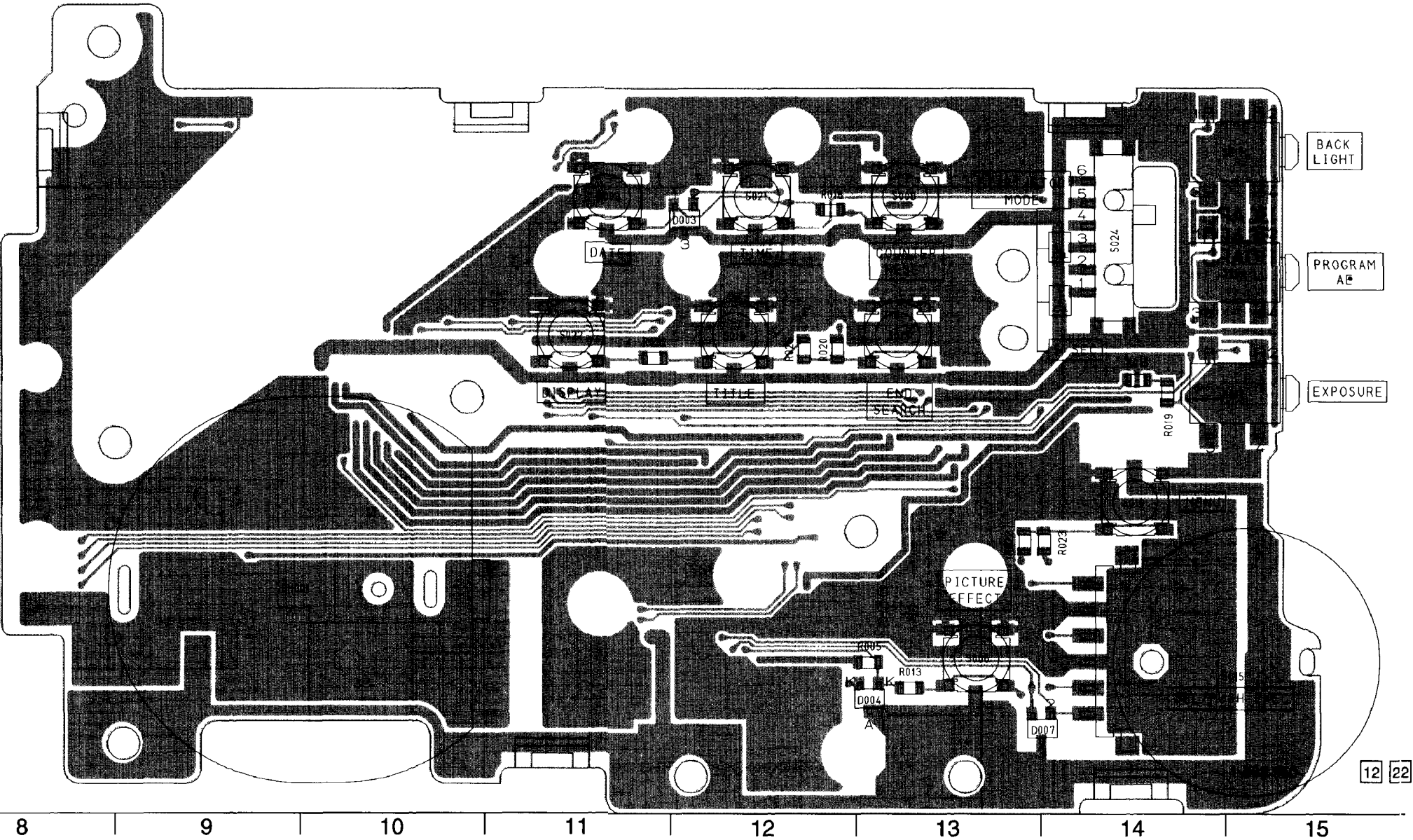
CF-50 BOARD

BH001	B-10
C001	B-6
C002	B-6
CN001	D-3
CN002	A-5
CN003	D-8
CN005	C-7
CN006	B-7
CN007	C-5
CN008	D-5
D001	D-6
D003	D-12
D004	A-13
D005	B-7
D006	B-6
D007	A-14
D008	B-6
D009	B-1
D102	A-4
Q001	D-5
Q002	C-1
Q003	B-3
Q005	B-2
R001	B-1
R002	B-13
R003	B-3
R005	A-13
R006	C-3
R007	D-3
R008	D-3
R009	D-1
R013	A-13
R015	C-14
R016	D-12
R019	C-14
R020	C-12
R023	B-14
R025	D-1
R026	C-12
R029	C-2
R031	B-4
R032	C-11
R036	C-2
R038	B-4
R039	C-2
R041	A-4
R049	B-3
R050	B-3
R051	B-3
R052	B-3
R053	A-4
S003	D-11
S004	C-15
S006	A-13
S008	D-13
S010	B-14
S012	C-15
S013	C-13
S015	A-15
S017	D-15
S018	C-12
S021	D-12
S022	C-11
S024	D-24

CF-50 BOARD (SIDE B)



CF-50 BOARD (SIDE A)



• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram

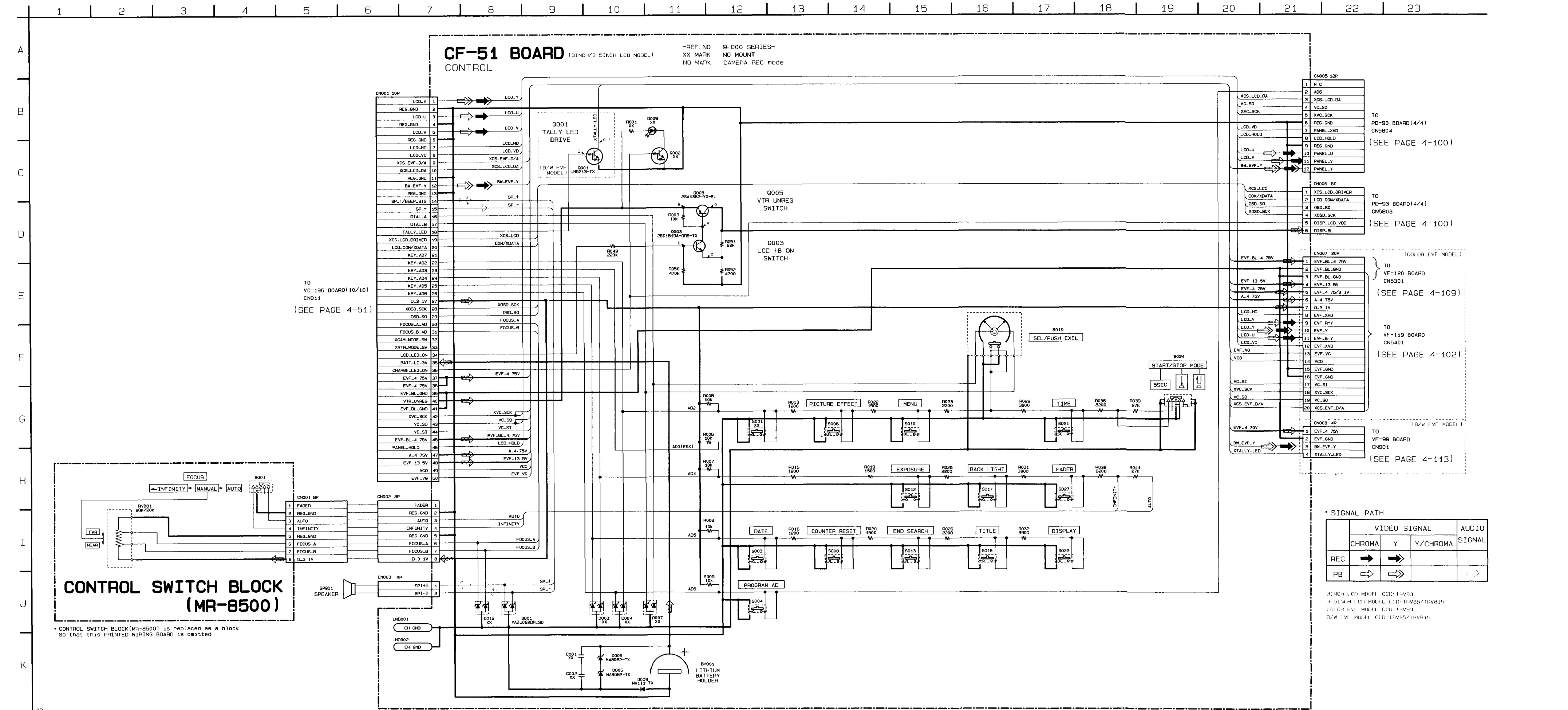
• Chip transistor



Chip diode

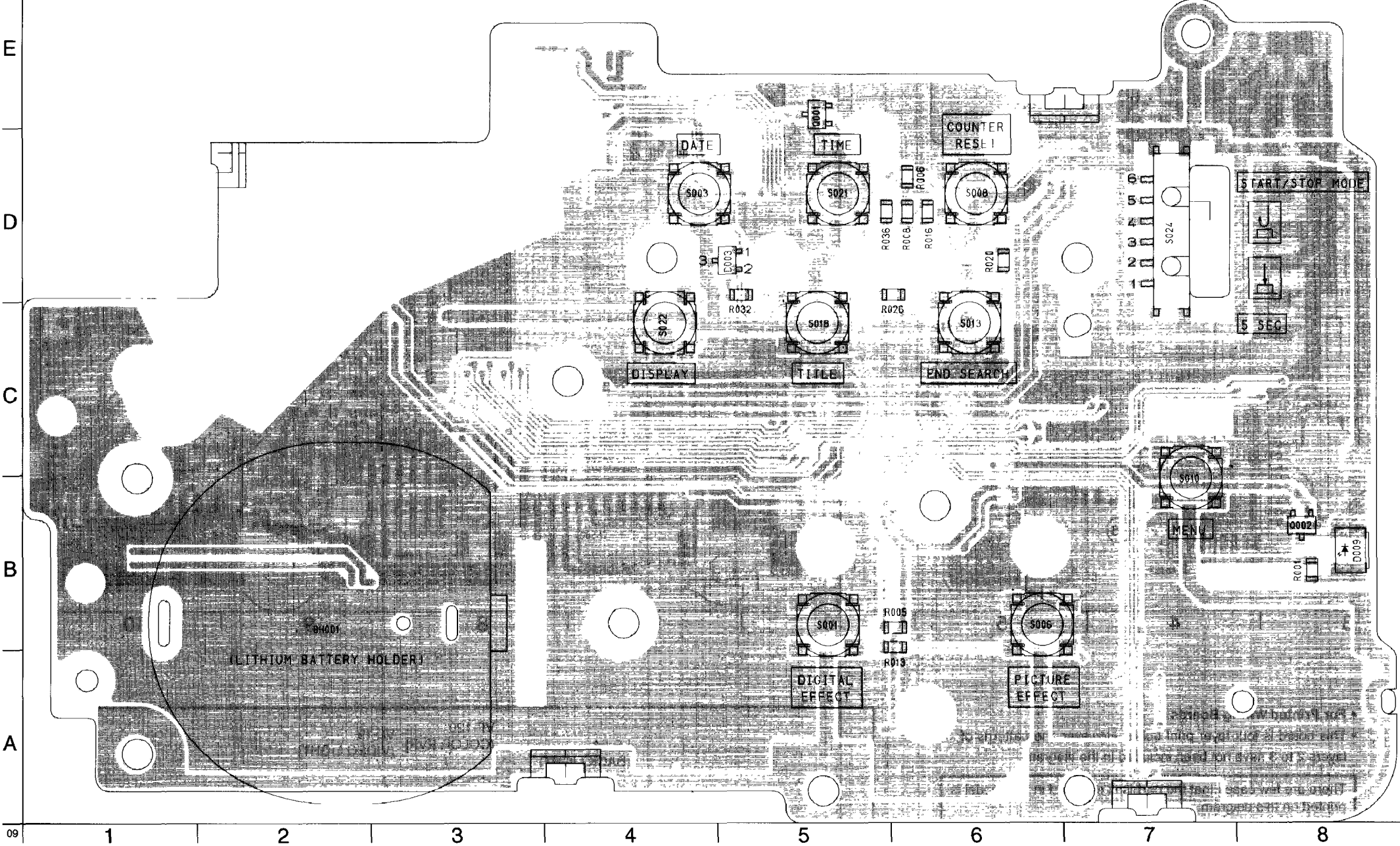




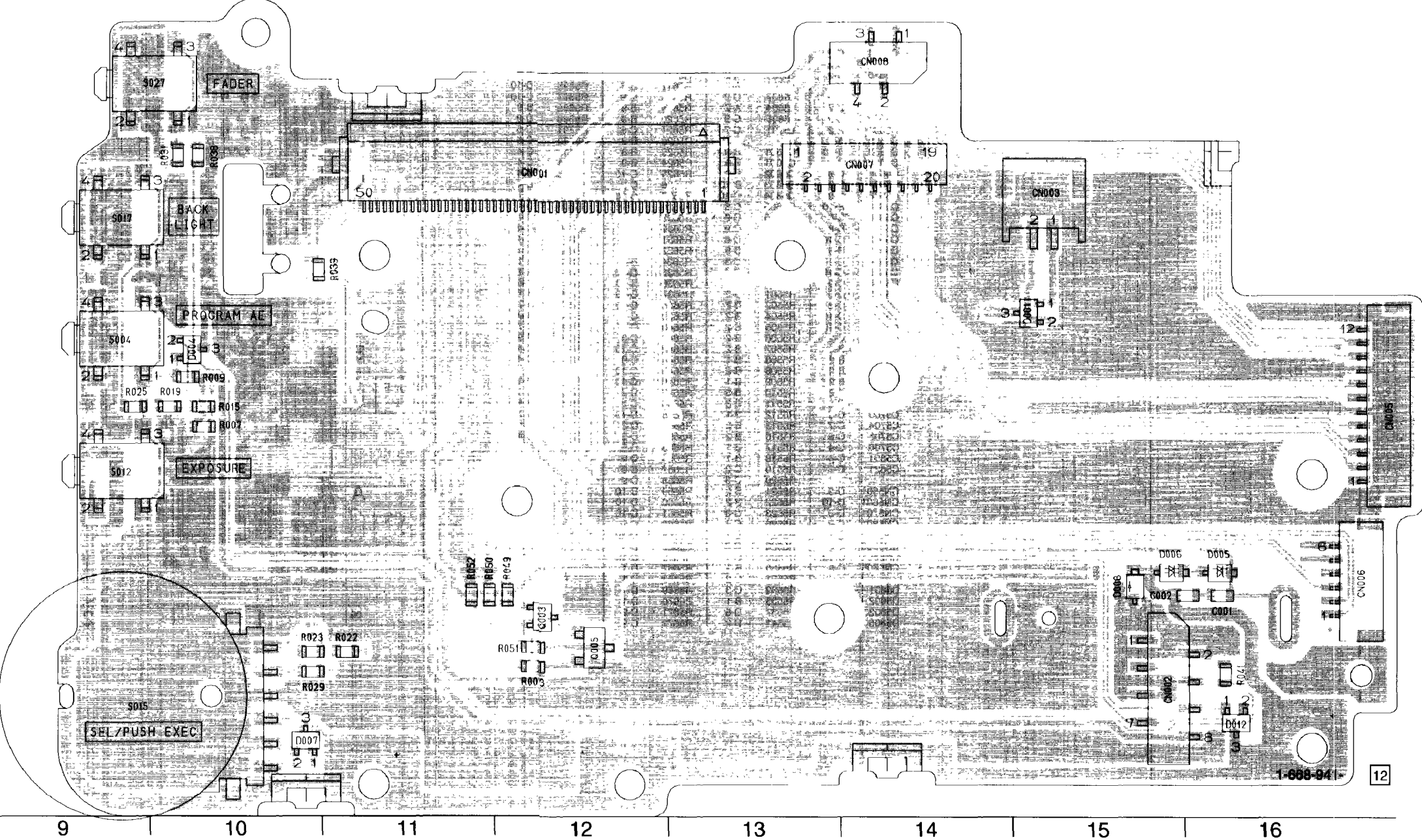


CF-51 (CONTROL (3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD
- Ref No. CF-51 BOARD 9,000 series -

CF-51 BOARD (SIDE B)



CF-51 BOARD (SIDE A)



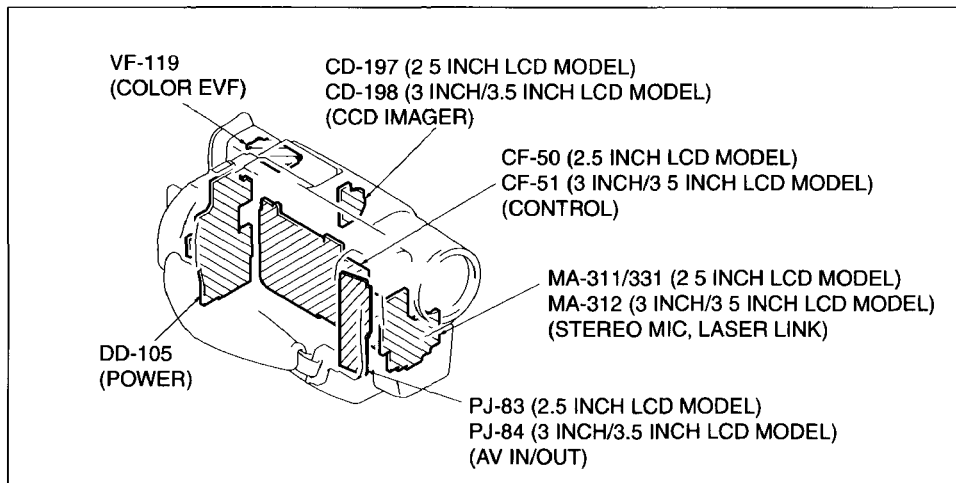
CF-51 BOARD

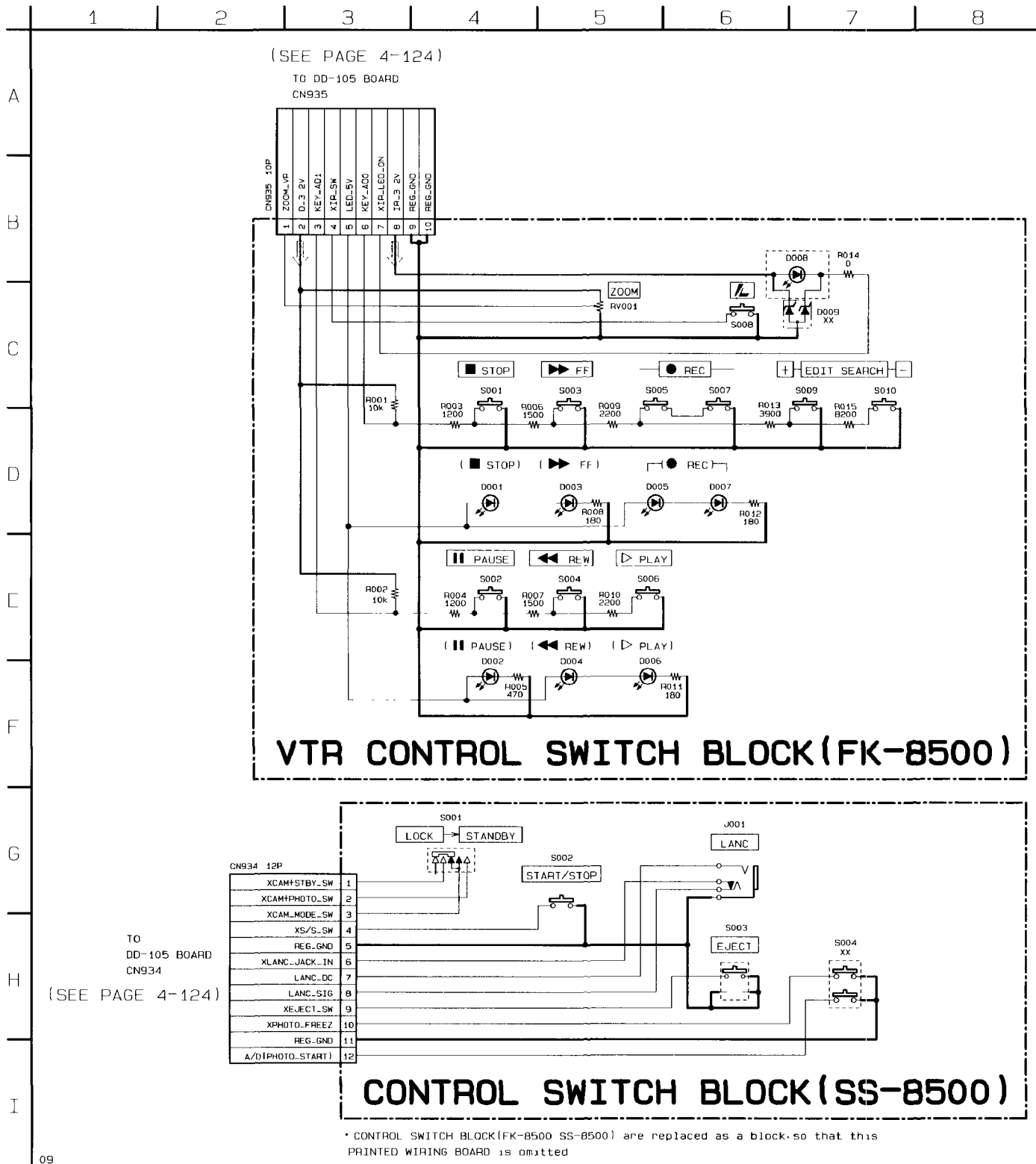
BH001	B-2	R031	D-10
C001	B-16	R038	D-5
C002	B-15	R038	D-10
		R039	D-10
		R041	A-16
CN001	D-12	R049	B-12
CN002	A-15	R050	B-11
CN003	D-15	R051	A-12
CN005	C-16	R052	B-11
CN006	B-16		
CN007	D-14	S001	B-5
CN008	E-14	S002	C-4
		S003	D-4
D001	C-15	S004	C-9
D003	D-5	S006	B-6
D004	C-10	S008	D-6
D005	B-16	S010	B-7
D006	B-15	S012	C-9
D007	A-10	S013	C-6
D008	B-15	S015	A-9
D009	B-8	S017	D-9
D012	A-16	S018	C-5
		S021	D-5
Q001	E-5	S024	D-7
Q002	B-8	S025	C-9
Q003	B-12	S027	E-10
Q005	A-12		
R001	B-8		
R003	A-12		
R005	B-5		
R006	D-6		
R007	C-10		
R008	D-6		
R009	C-10		
R013	B-5		
R015	C-10		
R018	D-6		
R019	C-10		
R020	D-6		
R022	A-11		
R023	A-10		
R029	A-10		

• For Printed Wiring Boards.

There are few cases that the part isn't mounted in this model is printed on this diagram

• Chip transistor Chip diode

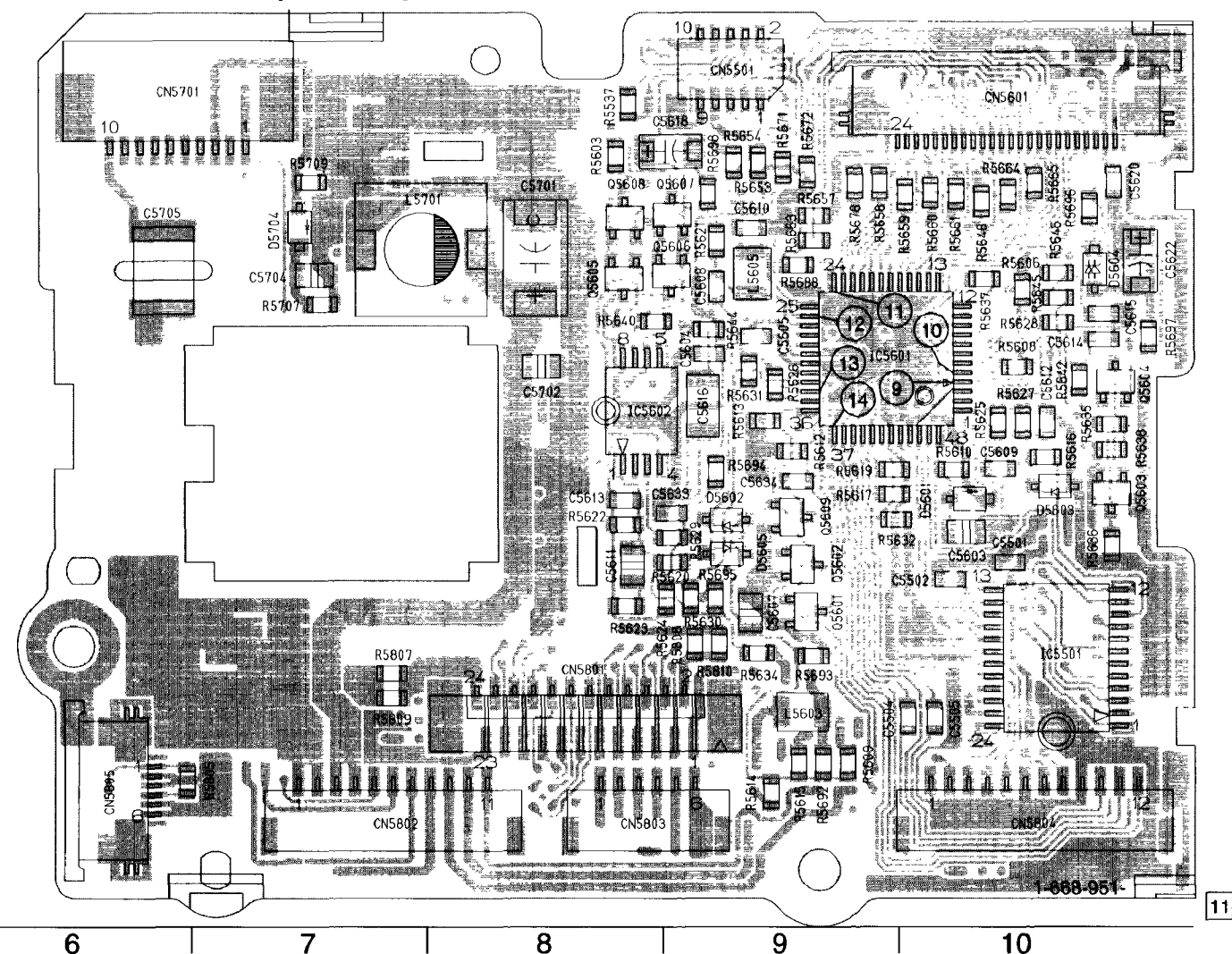




PD-92 BOARD

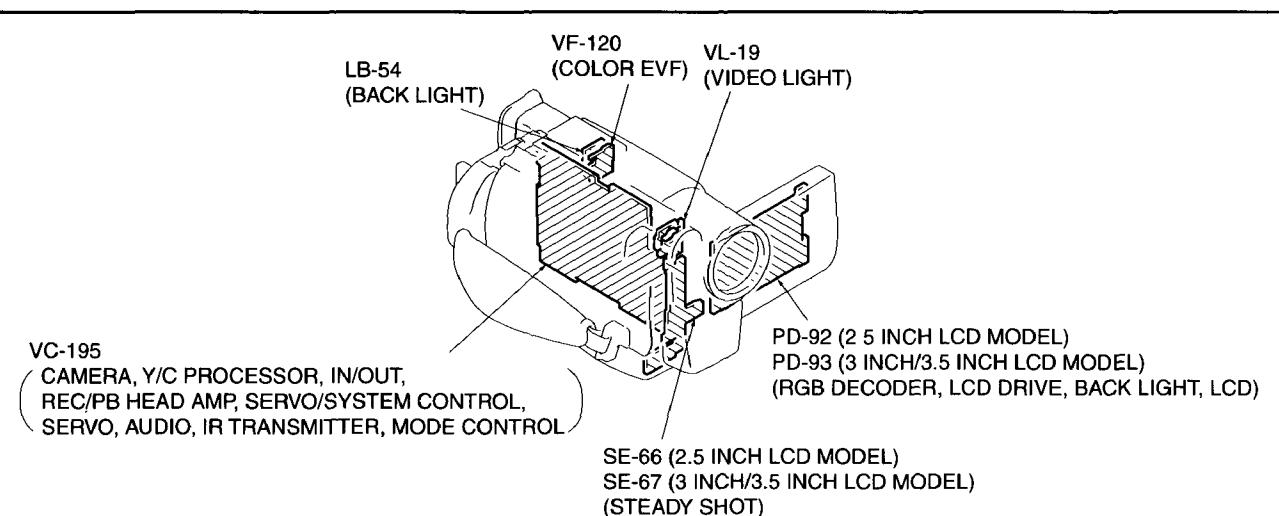
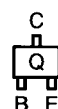
C5501	B-10	D5604	C-10	R5542	D-3	R5673	D-1
C5502	B-10	D5701	C-5	R5544	C-2	R5674	D-2
C5503	C-2	D5702	C-5	R5546	C-2	R5676	D-1
C5504	C-10	D5703	D-5	R5546	D-2	R5678	D-9
C5505	C-10	D5704	C-7	R5602	C-2	R5679	D-2
C5506	B-2			R5603	D-3	R5680	D-2
C5507	C-3	IC5501	B-10	R5604	D-3	R5681	D-2
C5508	B-2	IC5502	C-2	R5605	C-1	R5682	D-1
C5509	C-3	IC5601	C-9	R5606	C-10	R5683	D-2
C5510	C-1	IC5602	C-8	R5607	A-2	R5684	D-2
C5511	C-2	IC5701	C-4	R5609	C-3	R5685	D-3
C5512	C-1	IC5801	C-4	R5610	B-10	R5686	D-3
C5513	C-1			R5612	C-3	R5688	C-9
C5514	C-2	L5501	C-3	R5614	C-3	R5692	C-9
C5515	C-2	L5502	A-2	R5615	C-3	R5694	B-9
C5516	C-2	L5503	A-2	R5616	B-10	R5695	B-9
C5517	C-1	L5601	A-2	R5617	B-3	R5695	D-10
C5518	C-3	L5603	C-9	R5618	C-3	R5697	C-10
C5519	B-2	L5604	A-2	R5619	B-3	R5698	B-9
C5520	C-3	L5605	C-9	R5620	B-3	R5698	D-9
C5601	A-2	L5701	C-7	R5621	C-3	R5701	C-5
C5602	A-2			R5622	B-3	R5702	C-5
C5603	B-10	Q5501	C-2	R5623	B-3	R5703	C-4
C5604	C-9	Q5601	B-9	R5624	B-3	R5704	C-4
C5605	C-9	Q5602	B-9	R5625	C-10	R5705	C-4
C5607	B-9	Q5603	B-10	R5626	C-3	R5706	C-4
C5608	C-9	Q5604	C-10	R5627	C-10	R5707	C-7
C5609	B-10	Q5605	C-8	R5628	C-10	R5708	D-4
C5610	C-9	Q5606	C-9	R5629	B-3	R5709	D-7
C5611	B-8	Q5607	C-9	R5630	B-3	R5710	D-4
C5612	C-10	Q5608	C-8	R5631	C-3	R5801	C-1
C5613	B-8	Q5609	B-9	R5632	B-3	R5802	C-1
C5614	C-10	Q5701	C-3	R5634	B-3	R5803	A-1
C5615	C-10	Q5702	C-4	R5635	C-10	R5804	A-1
C5616	C-9			R5636	B-10	R5805	C-6
C5618	D-9	R5501	B-2	R5637	C-10	R5806	A-1
C5619	D-2	R5502	B-2	R5638	C-10	R5807	B-7
C5620	D-10	R5504	B-2	R5639	C-1	R5808	B-9
C5622	C-10	R5505	B-2	R5640	C-3	R5809	C-7
C5623	C-2	R5506	B-2	R5641	C-3	R5810	B-9
C5624	B-3	R5507	B-2	R5642	C-10	R5811	C-4
C5625	B-2	R5508	B-1	R5644	C-3	R5812	C-4
C5633	B-9	R5508	B-2	R5645	C-10		
C5634	B-9	R5509	B-1	R5646	C-10	S5801	D-1
C5701	C-8	R5510	B-3	R5647	D-2	S5802	C-1
C5702	C-8	R5511	B-3	R5648	C-3	S5803	B-1
C5703	C-3	R5512	B-1	R5648	D-10	S5804	A-1
C5704	C-7	R5513	B-2	R5651	D-2		
C5705	C-6	R5516	B-2	R5652	D-2	T5701	C-4
C5706	C-4	R5517	B-1	R5653	D-3		
C5801	C-4	R5518	B-1	R5654	D-3		
C5821	C-1	R5519	C-3	R5657	C-3		
		R5520	C-3	R5658	D-3		
CN5501	D-9	R5521	B-2	R5659	D-10		
CN5601	D-10	R5522	B-2	R5660	D-10		
CN5701	D-6	R5523	C-3	R5661	D-10		
CN5801	C-8	R5526	C-1	R5663	C-3		
CN5802	C-7	R5527	B-1	R5664	D-10		
CN5803	C-8	R5528	C-3	R5665	D-1		
CN5804	C-10	R5529	C-1	R5665	D-10		
CN5805	C-6	R5530	B-1	R5667	D-1		
		R5531	C-2	R5668	D-1		
D5601	B-10	R5532	C-3	R5669	D-1		
D5602	B-9	R5533	B-1	R5670	D-1		
D5603	B-10	R5537	D-8	R5671	D-3		
D5605	B-9	R5541	D-2	R5672	D-3		

PD-92 BOARD (SIDE A)



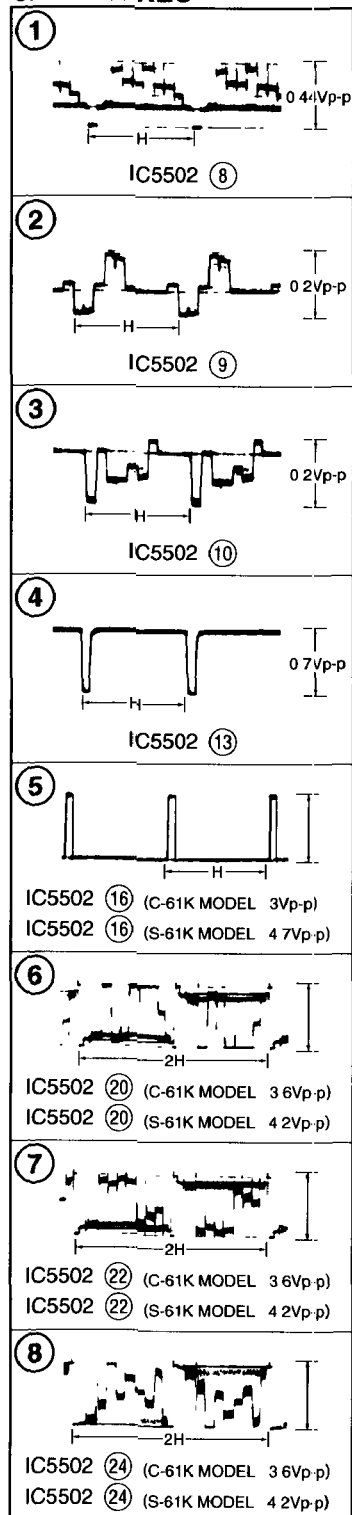
- There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor



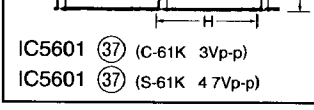
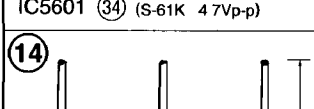
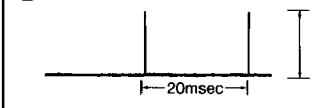
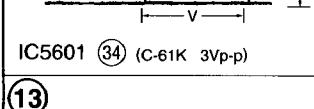
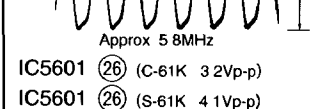
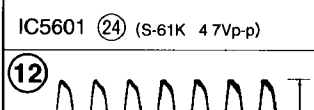
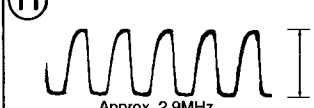
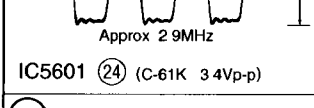
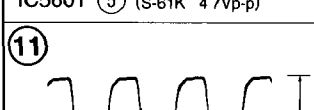
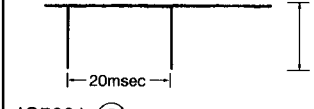
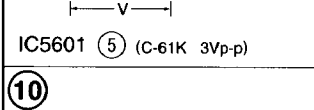
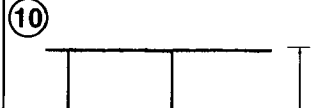
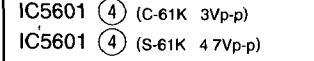
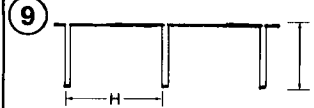
RGB DECODER
PD-92 (1/4) (2.5 INCH LCD MODEL)

PD-92 BOARD (1/4)
CAMERA REC



- For schematic diagrams.
- Refer to page 4–79 for Printed Wiring Board

PD-92 BOARD (2/4)
 CAMERA REC



PD-92 BOARD (2/4)
 LCD DRIVE (TG BLOCK)

- REF NO 10-000 SERIES-
 XX MARK NO MOUNT

Ref No	Model	S-61K	C-61K
C5601	XX	10u	10u
C5603	0 1u	0 33u	0 33u
C5614	330p	XX	XX
C5615	220p	XX	XX
C5618	6 8u	XX	XX
C5619	0 01u	XX	XX
C5623	XX	0 1u	XX
IC5601	L796H184	CM7017L2-T4	XX
L5601	XX	10uH	XX
C5604	2501819A-QRS	XX	XX
R5602	XX	0	XX
R5605	XX	0	XX
R5607	0	XX	XX
R5610	100k	56k	XX
R5621	1M	XX	XX
R5625	100k	56k	XX
R5627	180k	100k	XX
R5632	0	XX	XX
R5635	4700	XX	XX
R5636	22k	0	XX
R5637	0	XX	XX
R5638	10k	XX	XX
R5639	10k	XX	XX
R5642	4700	XX	XX
R5645	82k	XX	XX
R5646	82k	XX	XX
R5647	XX	0	XX
R5648	XX	0	XX
R5651	33k	XX	XX
R5652	22k	XX	XX
R5653	33k	XX	XX
R5654	22k	XX	XX
R5657	XX	XX	XX
R5658	0	XX	XX
R5659	0	XX	XX
R5660	0	XX	XX
R5661	0	XX	XX
R5663	XX	0	XX
R5664	XX	0	XX
R5665	XX	0	XX
R5666	XX	0	XX
R5667	XX	0	XX
R5668	XX	0	XX
R5669	0	XX	XX
R5670	0	XX	XX
R5671	0	XX	XX
R5672	XX	220k	XX
R5673	XX	XX	XX
R5674	0	XX	XX
R5676	0	XX	XX
R5678	XX	0	XX
R5679	47	XX	XX
R5680	47	XX	XX
R5681	47	XX	XX
R5682	XX	47	XX
R5683	XX	47	XX
R5684	XX	47	XX
R5692	22k	47k	XX
R5693	180k	470k	XX
R5696	0	XX	XX
R5697	XX	0	XX
R5698	XX	0	XX

TO
 PD-92 BOARD(4/4)

TO
 PD-92 BOARD(1/4)

TO
 PD-92 BOARD(4/4)

TO
 PD-92 BOARD(1/4)

IC5602
 FRPC AMP

Q5605-5608
 FRPC BUFFER

• SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→		
PB	→		

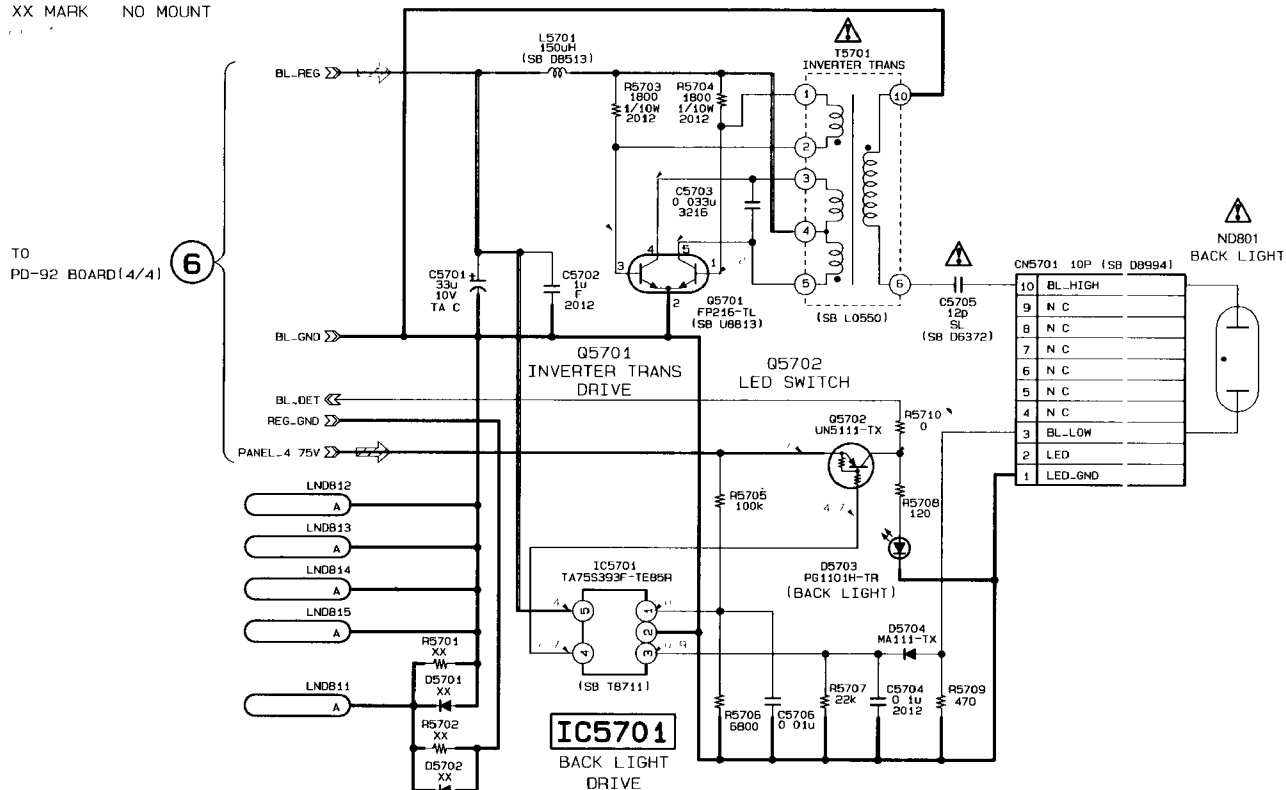
- For schematic diagrams.
- Refer to page 4-79 for Printed Wiring Board.

PD-92 BOARD(3/4)

BACK LIGHT (BL BLOCK)

-REF NO 10-000 SERIES-

XX MARK NO MOUNT



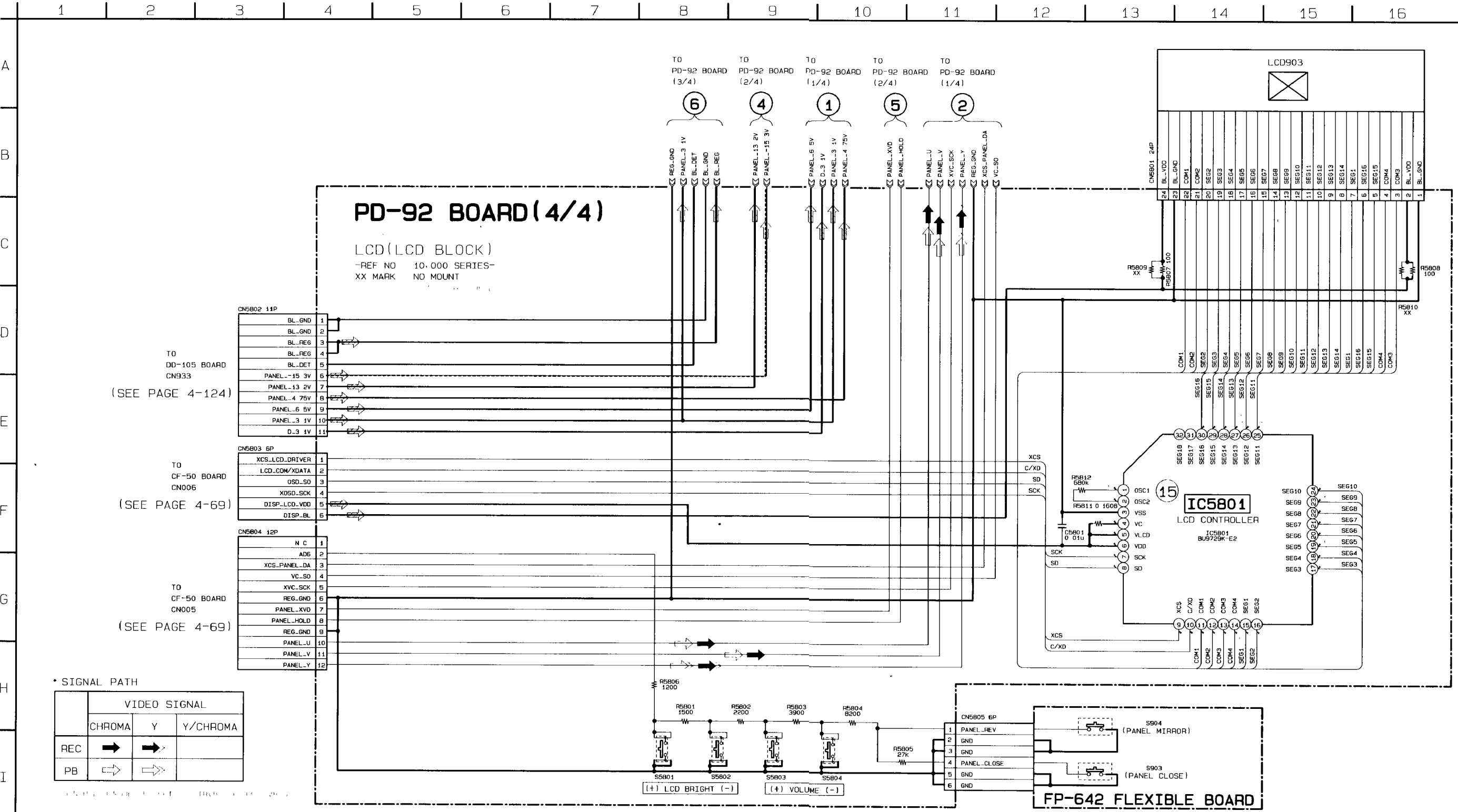
Note

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

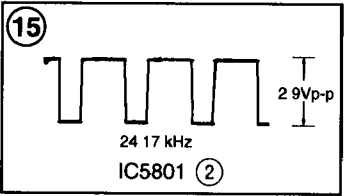
Note

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

- For schematic diagrams.
- Refer to page 4-79 for Printed Wiring Board



PD-92 BOARD (4/4)
CAMERA REC



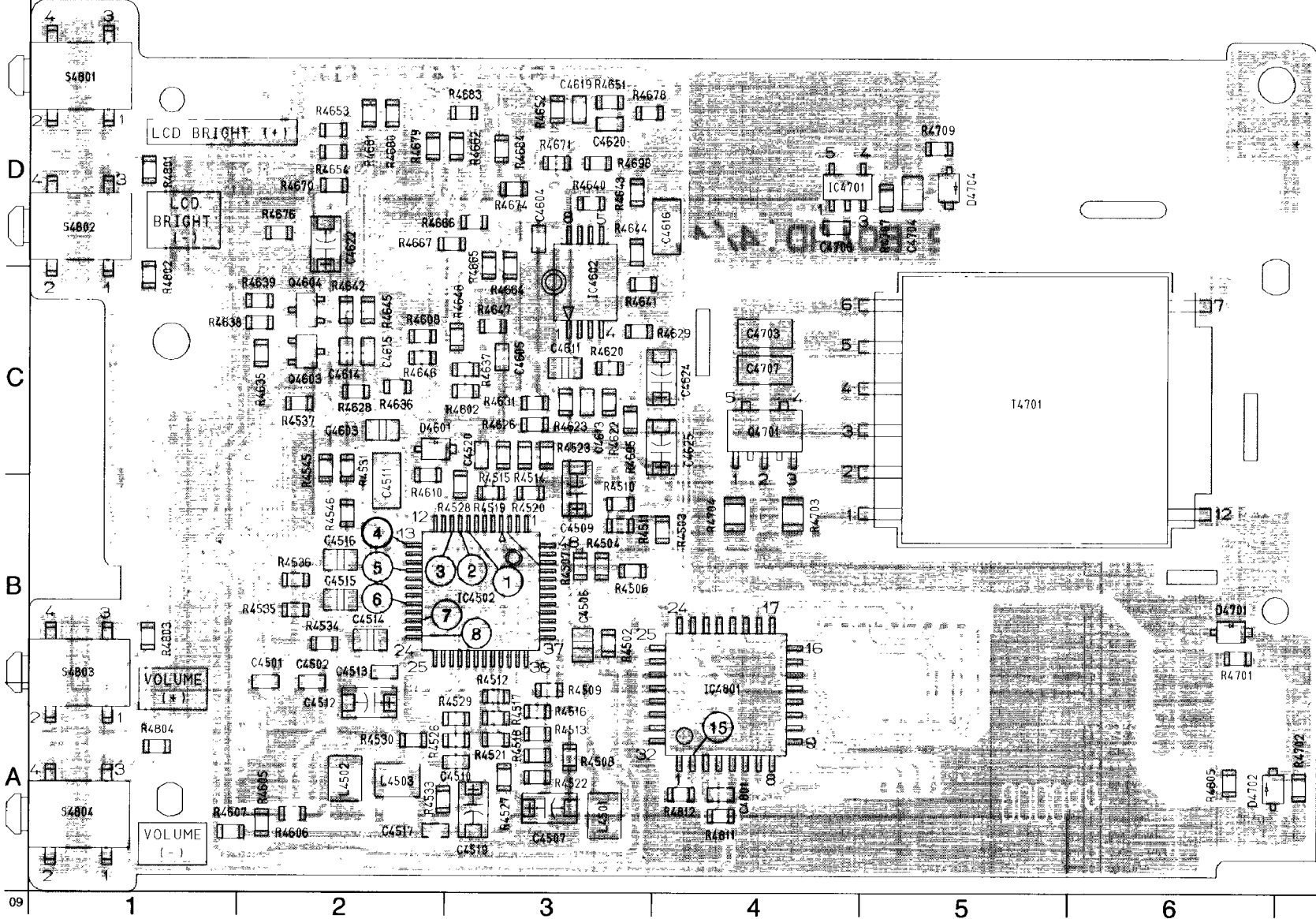
BACK LIGHT, LCD
PD-92 (3/4, 4/4) (2.5 INCH LCD MODEL)

CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

PD-93 (RGB DECODER, LCD DRIVE, BACK LIGHT, LCD (3 INCH/3.5 INCH LCD MODEL) PRINTED WIRING BOARD
- Ref No PD-93 BOARD 10,000 series -

PD-93 BOARD			
C4501	B-2	D4702	A-6
C4502	B-2	D4704	D-5
C4503	B-11		
C4504	B-11	IC4501	A-12
C4505	B-11	IC4502	B-3
C4506	B-3	IC4601	C-11
C4507	A-3	IC4602	C-3
C4508	B-11	IC4701	D-4
C4509	B-3	IC4801	A-4
C4510	A-3		
C4511	B-2	L4501	A-3
C4512	A-2	L4502	A-2
C4513	B-2	L4601	A-10
C4514	B-2	L4603	B-11
C4515	B-2	L4604	A-11
C4516	B-2	L4605	C-11
C4517	A-2	L4701	C-9
C4518	A-11		
C4519	A-3	Q4501	A-11
C4520	C-3	Q4601	B-11
C4601	A-10	Q4602	B-11
C4602	B-11	Q4603	C-2
C4603	C-2	Q4604	C-2
C4604	D-3	Q4605	D-10
C4605	C-3	Q4606	D-10
C4607	C-10	Q4607	D-10
C4608	C-10	Q4608	D-10
C4609	B-12	Q4609	B-11
C4610	C-11	Q4701	C-4
C4611	C-3	Q4702	D-9
C4612	B-12		
C4613	C-3	R4501	B-11
C4614	C-2	R4502	B-3
C4615	C-2	R4503	B-4
C4616	D-1	R4504	B-3
C4618	D-11	R4505	B-11
C4619	D-3	R4506	B-3
C4620	D-3	R4507	B-3
C4621	D-12	R4508	A-3
C4622	D-2	R4509	A-3
C4623	D-10	R4510	B-3
C4624	C-4	R4511	B-3
C4625	C-4	R4512	A-3
C4633	C-10	R4513	C-3
C4634	C-11	R4514	A-3
C4701	C-9	R4516	C-3
C4702	B-10	R4517	A-3
C4703	C-4	R4518	A-3
C4704	D-5	R4519	B-3
C4705	D-8	R4520	B-3
C4706	D-4	R4521	A-3
C4707	C-4	R4522	A-3
C4801	A-4	R4523	C-3
		R4526	A-3
CN4501	C-12	R4527	A-3
CN4601	D-12	R4528	B-3
CN4701	D-9	R4529	A-3
CN4801	B-9	R4530	A-2
CN4802	A-8	R4531	C-2
CN4803	A-9	R4532	A-12
CN4804	A-10	R4533	A-2
CN4805	A-7	R4534	B-2
CN4806	B-12	R4535	B-2
		R4536	B-2
D4601	C-2	R4537	C-2
D4602	C-10	R4541	A-11
D4603	B-12	R4542	A-11
D4605	C-10	R4544	A-11
D4614	D-12	R4545	C-2
D4701	B-6		
		R4546	B-2
		R4602	C-3
		R4603	D-10
		R4604	A-12
		R4605	A-2
		R4606	A-2
		R4607	A-1
		R4608	C-2
		R4609	B-11
		R4610	C-2
		R4612	B-11
		R4613	A-2
		R4614	C-10
		R4615	B-11
		R4616	B-12
		R4617	B-11
		R4619	B-11
		R4620	C-3
		R4621	C-10
		R4622	C-3
		R4623	C-3
		R4624	C-11
		R4625	B-11
		R4626	C-3
		R4627	B-11
		R4628	C-2
		R4629	C-11
		R4630	C-3
		R4631	C-3
		R4632	B-11
		R4634	C-11
		R4635	C-2
		R4636	C-2
		R4637	C-3
		R4638	C-2
		R4639	C-2
		R4640	D-3
		R4641	C-3
		R4642	C-2
		R4643	D-3
		R4644	D-3
		R4645	C-2
		R4646	C-2
		R4647	C-3
		R4648	C-3
		R4651	D-3
		R4652	D-3
		R4653	D-2
		R4654	D-2
		R4657	D-11
		R4658	D-11
		R4659	D-11
		R4660	D-11
		R4661	D-11
		R4663	D-11
		R4664	D-3
		R4665	D-3
		R4666	D-3
		R4667	D-3
		R4668	C-12
		R4669	D-12
		R4670	D-2
		R4671	D-3
		R4672	D-10
		R4673	D-12
		R4674	D-3
		R4676	D-2
		R4677	D-11
		R4678	D-2
		R4678	D-2
		R4678	D-2

PD-93 BOARD (SIDE B)



• For Printed Wiring Boards.

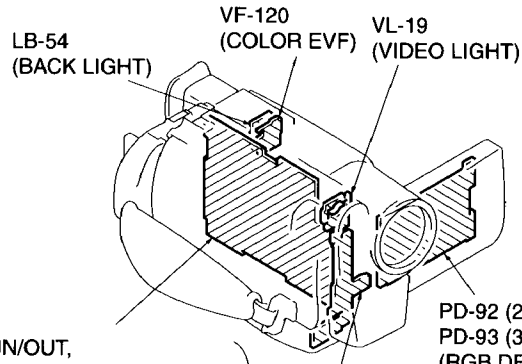
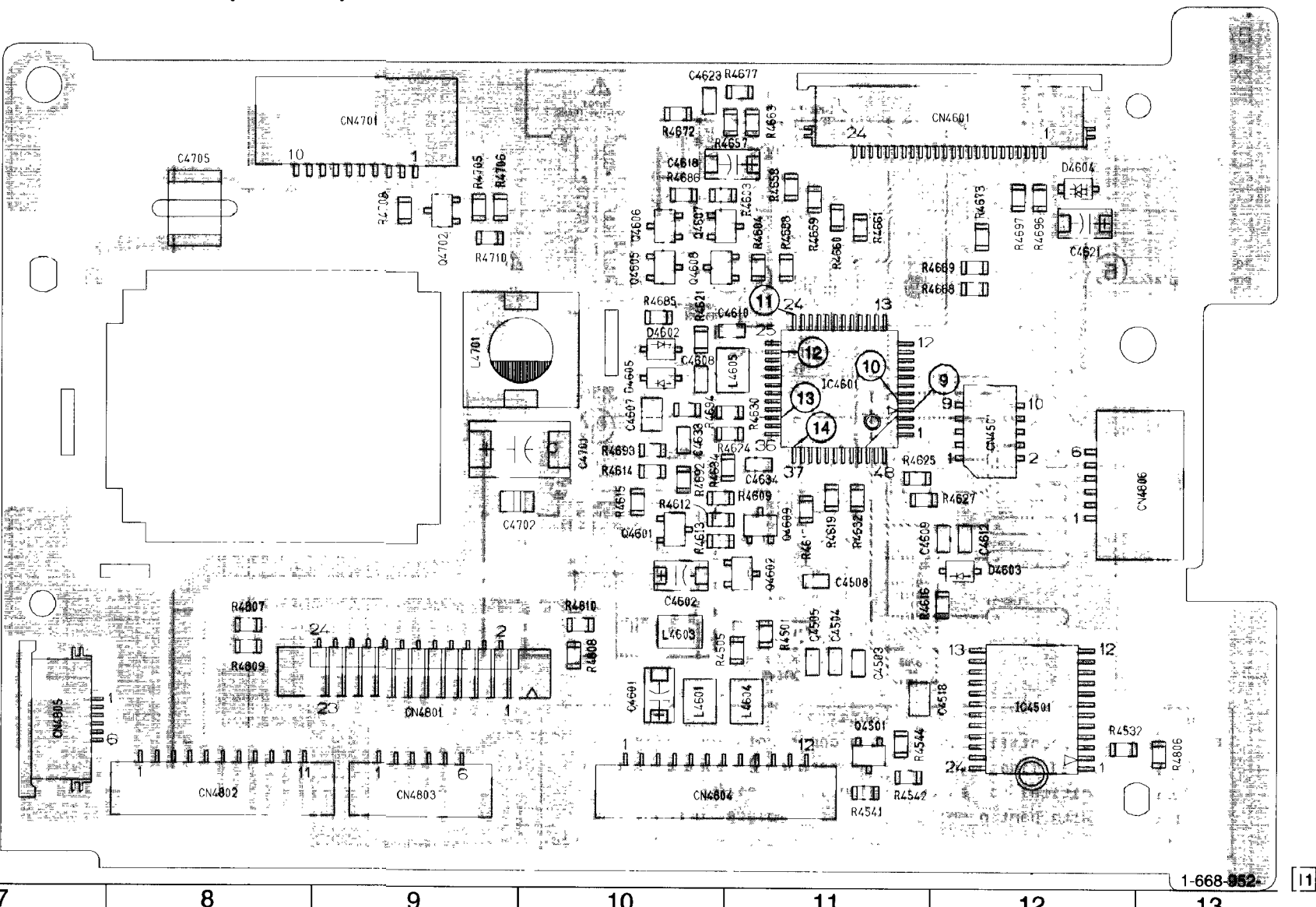
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

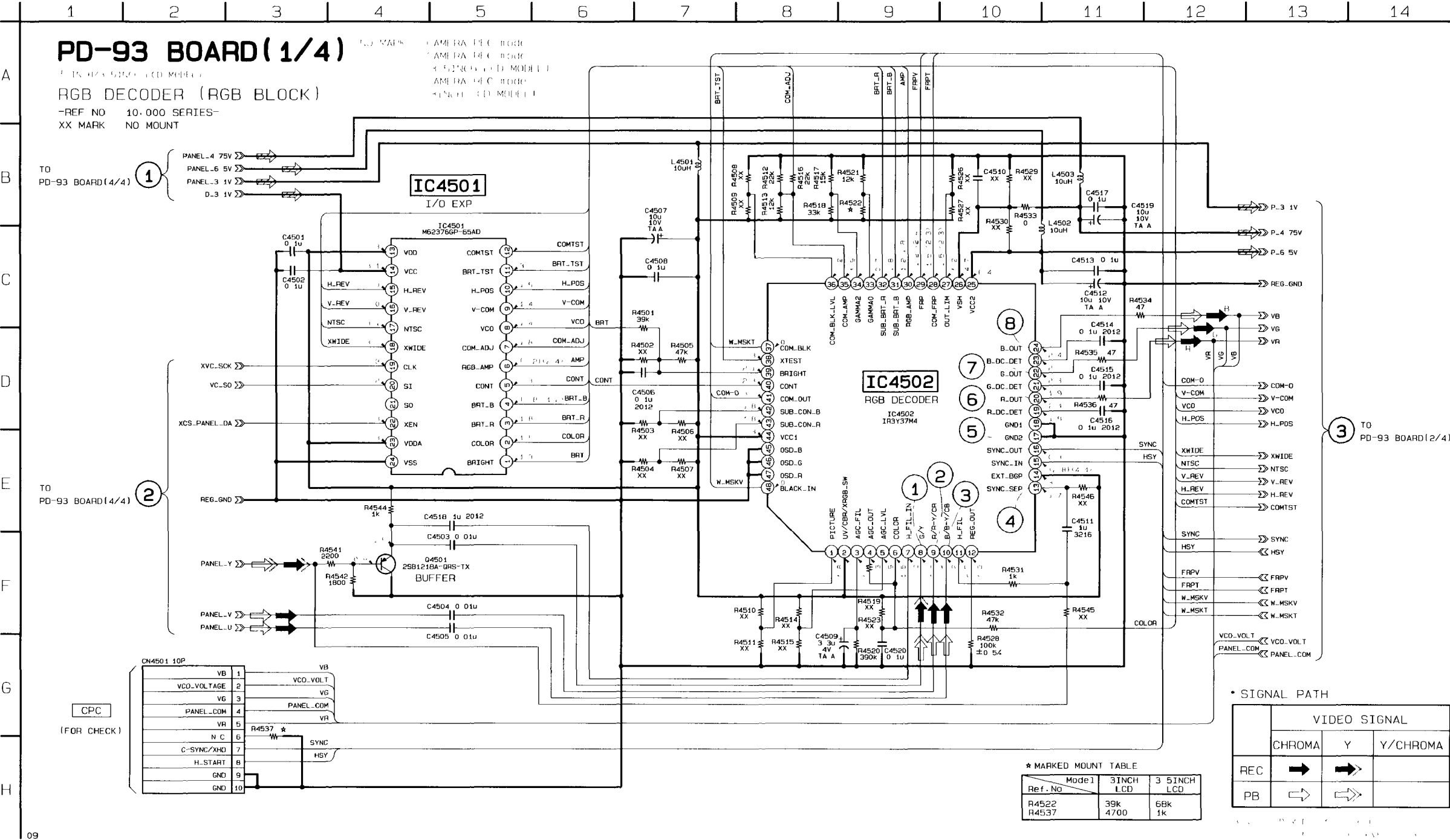
There are few cases that the part isn't mounted in this model is printed on this diagram

- Chip transistor

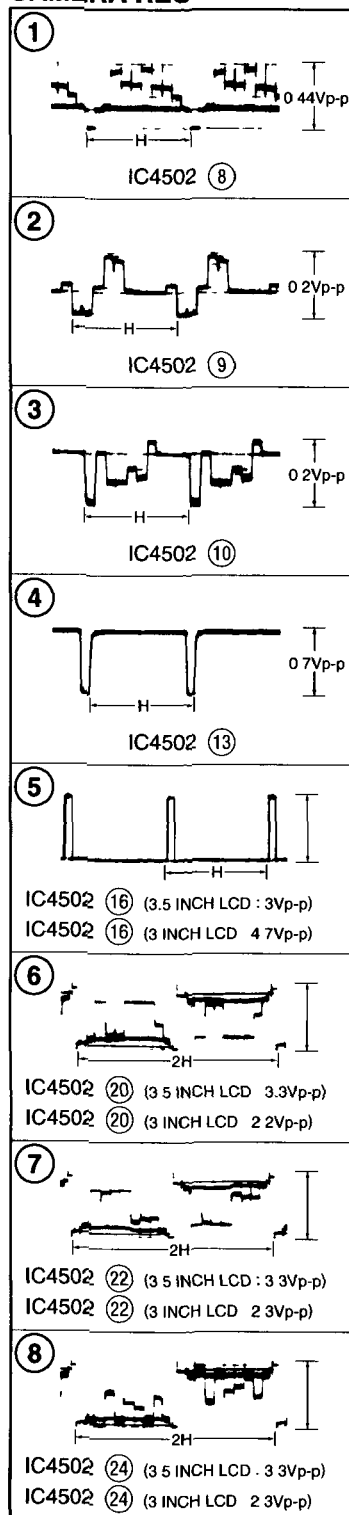


PD-93 BOARD (SIDE A)



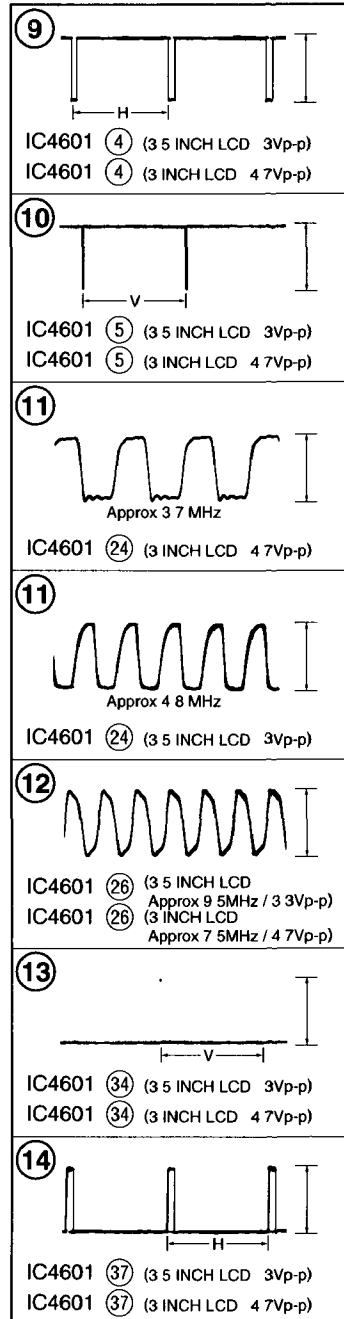


PD-93 BOARD (1/4)
CAMERA REC



- **For schematic diagrams.**
- Refer to page 4–90 for Printed Wiring Board.

PD-93 BOARD (2/4)
CAMERA REC



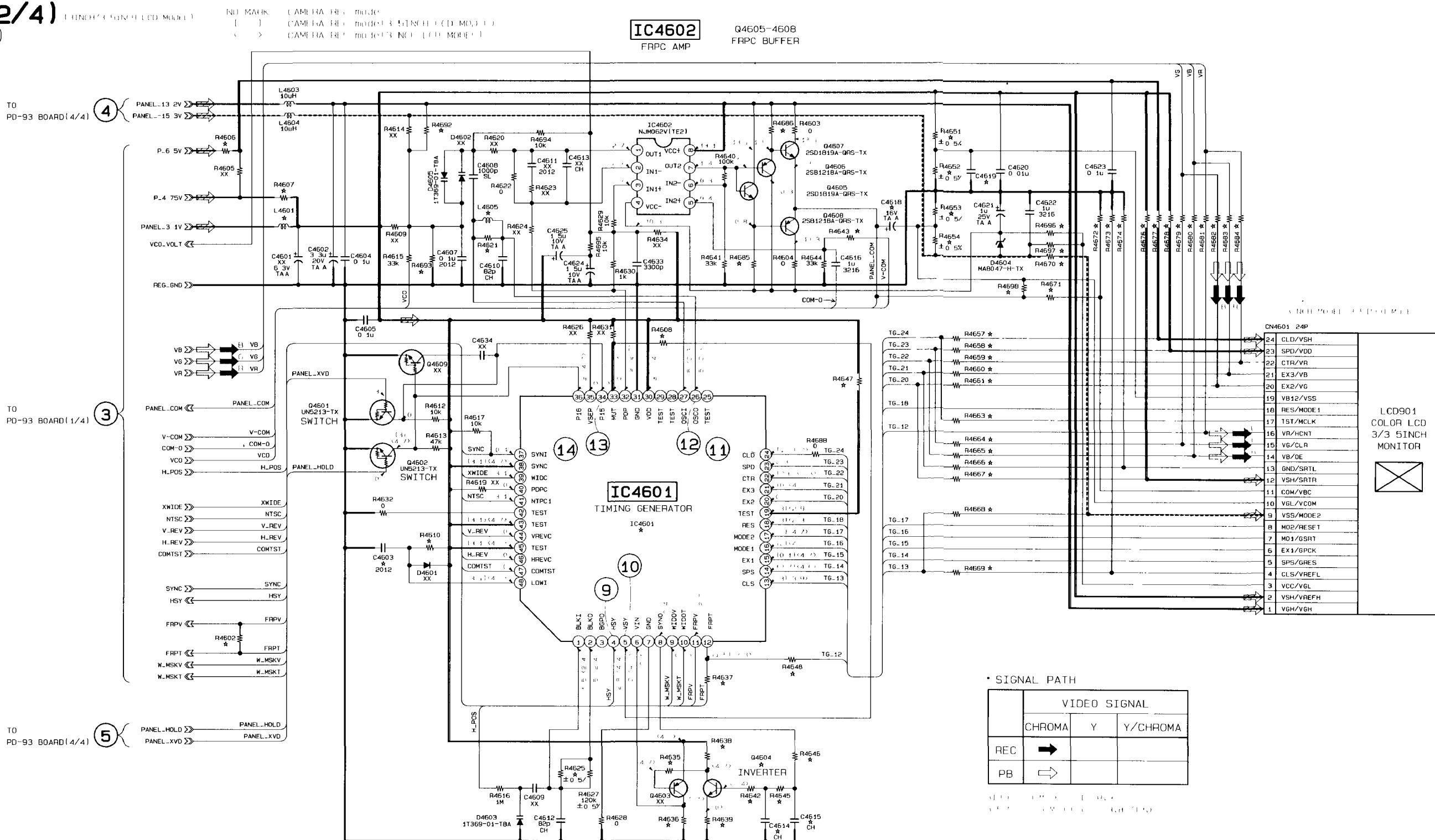
PD-93 BOARD (2/4)

```

-REF NO      10.000 SERIES-
XX MARK      NO MOUNT

```

MARKED MOUNT TABLE		
Ref	Model	
No		
C4603	0 1u	0. 33u
C4614	230P	XX
C4615	300P	XX
C4618	6 8u	XX
C4619	0 01u	XX
C4620	L 29GH164	CN7017L3-T4
L4601	X	100H
L4605	18UH	100H
Q4604	2501819A-GRS	XX
R4602	XX	XX
R4606	XX	0
R4607	0	XX
R4608	0	XX
R4610	100K	56K
R4621	1M	XX
R4625	56K	47K
R4635	4700	XX
R4636	22K	0
R4637	0	XX
R4638	10K	XX
R4639	10K	XX
R4642	4700	XX
R4643	5K	47K
R4645	82K	XX
R4646	82K	XX
R4647	XX	XX
R4648	XX	0
R4651	33K	XX
R4652	22K	0
R4653	3K	XX
R4654	22K	XX
R4657	0	XX
R4658	0	XX
R4659	0	XX
R4660	0	XX
R4661	XX	XX
R4663	XX	0
R4664	XX	0
R4665	XX	0
R4666	XX	0
R4667	XX	0
R4668	XX	0
R4669	XX	XX
R4670	0	XX
R4671	0	XX
R4672	XX	15K
R4673	XX	0
R4674	0	XX
R4676	0	XX
R4677	XX	0
R4678	XX	0
R4679	0	XX
R4680	0	XX
R4681	0	XX
R4682	XX	0
R4683	XX	XX
R4684	XX	0
R4685	100K	56K
R4686	100K	56K
R4692	33K	56K
R4693	270K	82K
R4696	0	XX
R4697	XX	XX
R4698	XX	0



- SIGNAL PATH

	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	➡		
PB	➡		

- For schematic diagrams.
- Refer to page 4-90 for Printed Wiring Board.

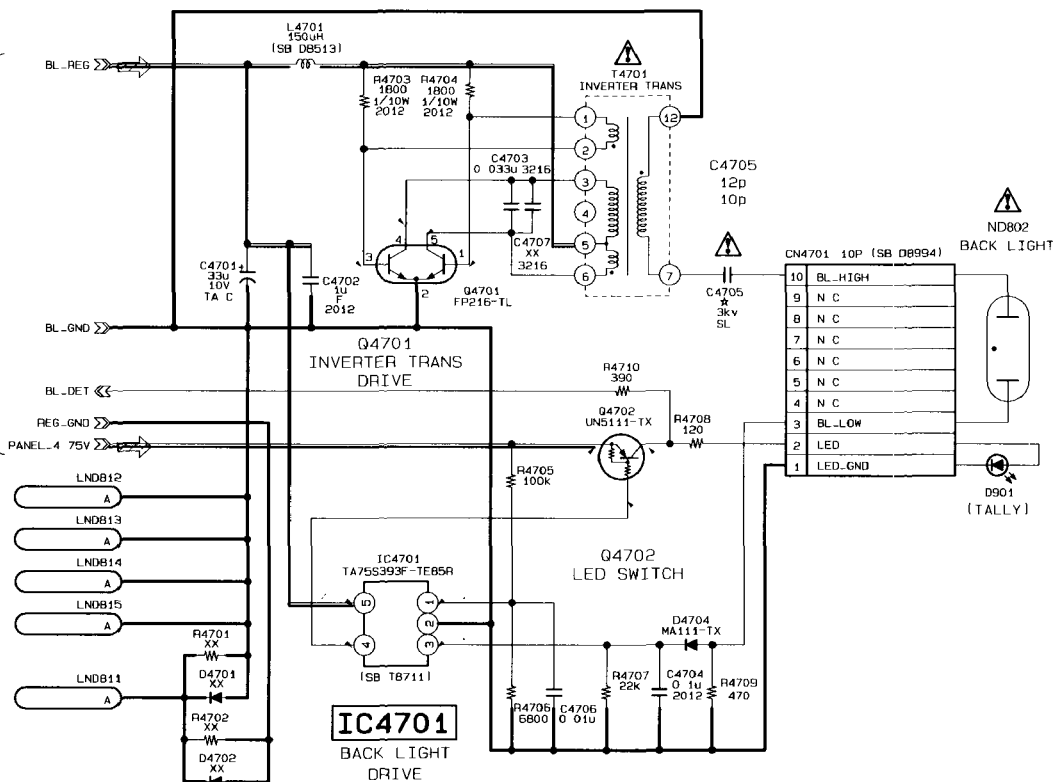
PD-93 BOARD(3/4)

BACK LIGHT (BL BLOCK)

-REF. NO 10-000 SERIES-
XX MARK NO MOUNT

T0
PD-93 BOARD(4/4)

6



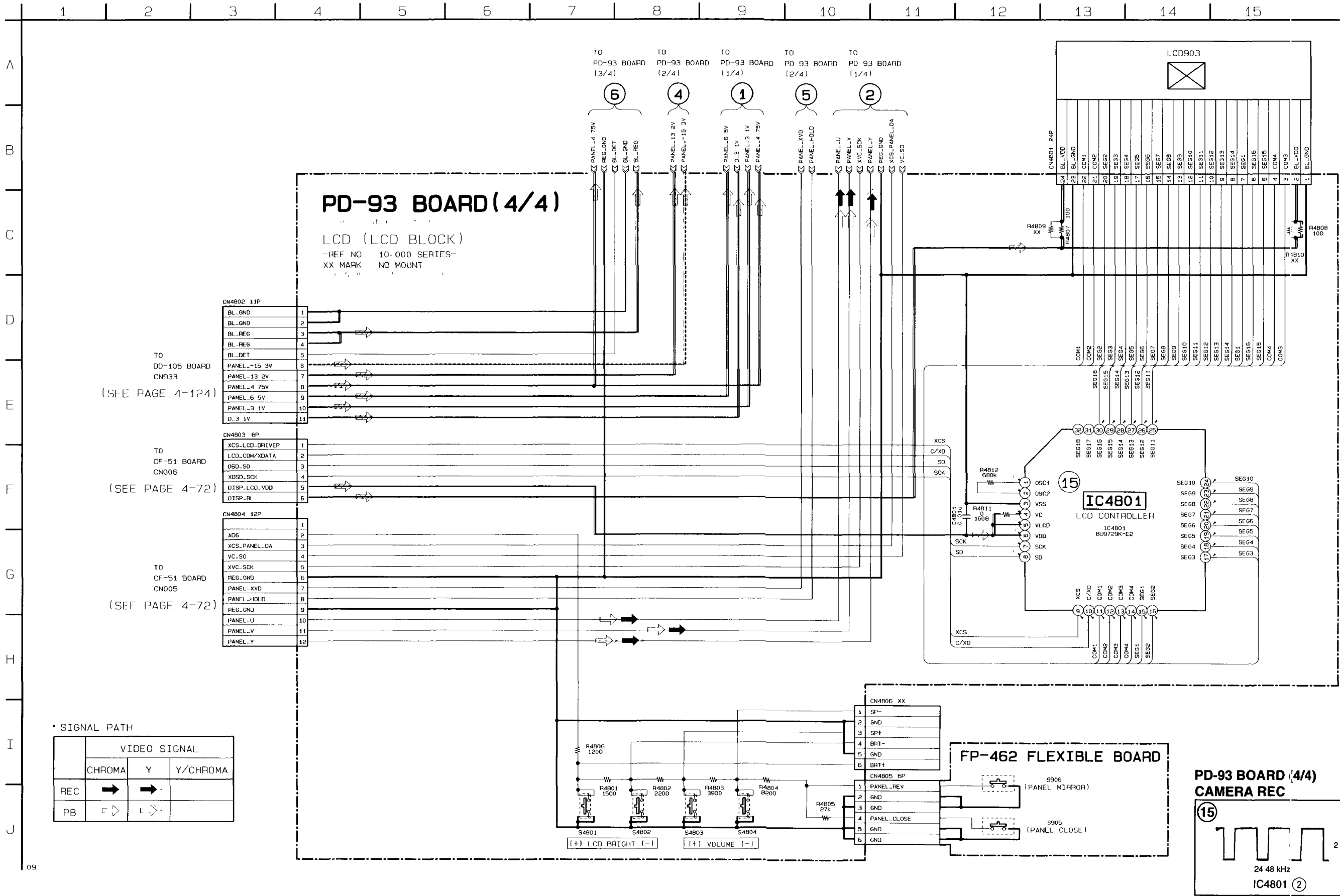
Note

The components identified by
mark or dotted line with
mark are critical for safety
Replace only with part number
specified

Note

Les composants identifiés par
une marque sont critiques
pour la sécurité
Ne les remplacer que par une
pièce portant le numéro spécifié

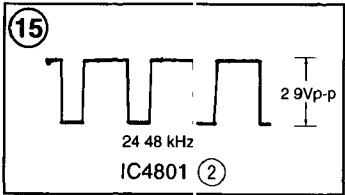
- For schematic diagrams.
- Refer to page 4-90 for Printed Wiring Board.



• SIGNAL PATH

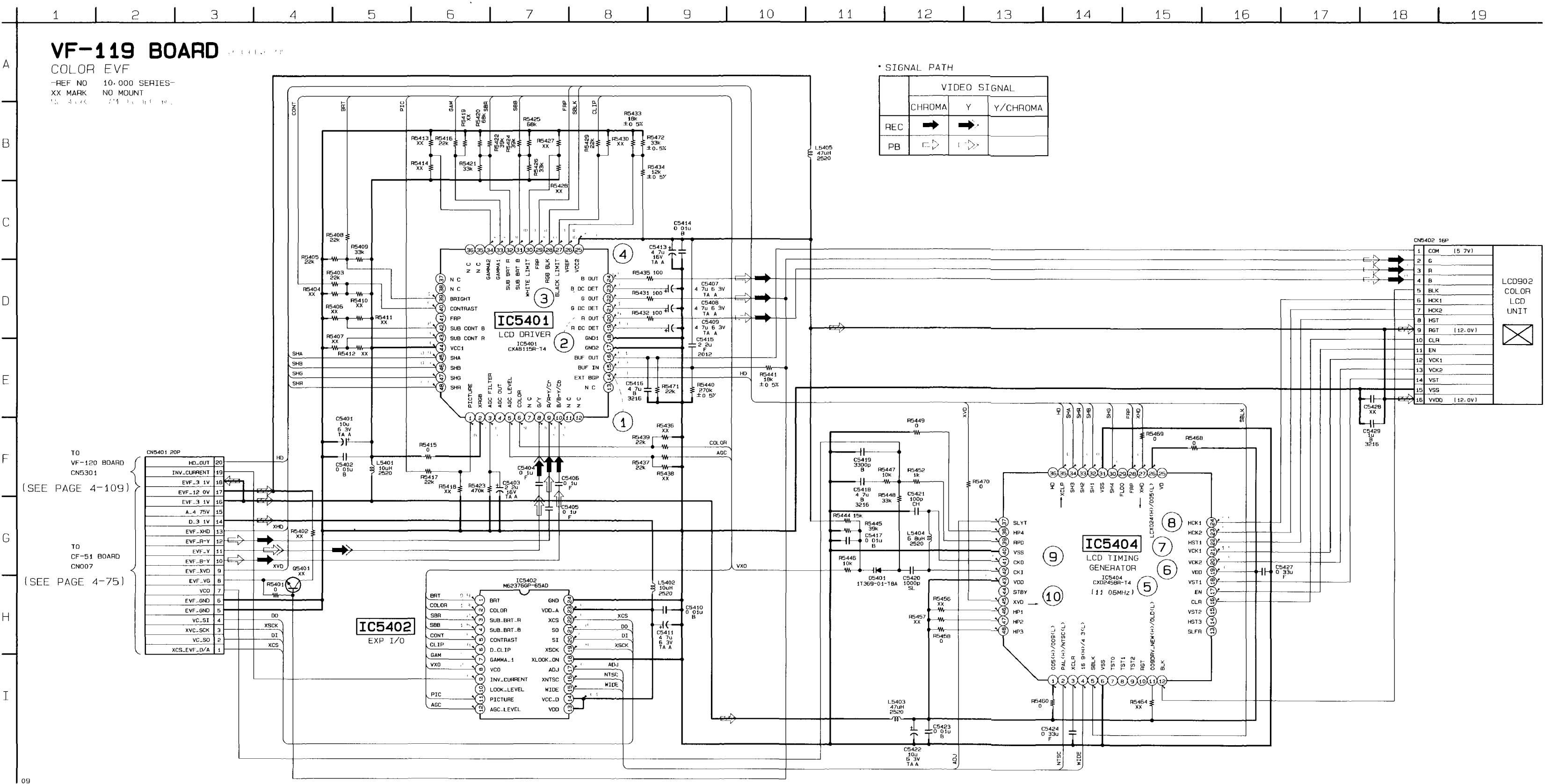
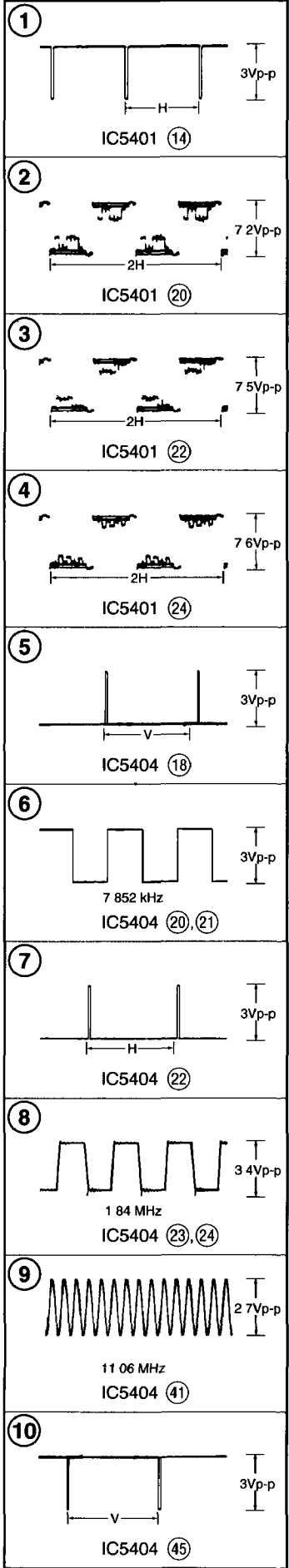
	VIDEO SIGNAL		
	CHROMA	Y	Y/CHROMA
REC	→	→	
PB	→	→	

PD-93 BOARD (4/4)
CAMERA REC



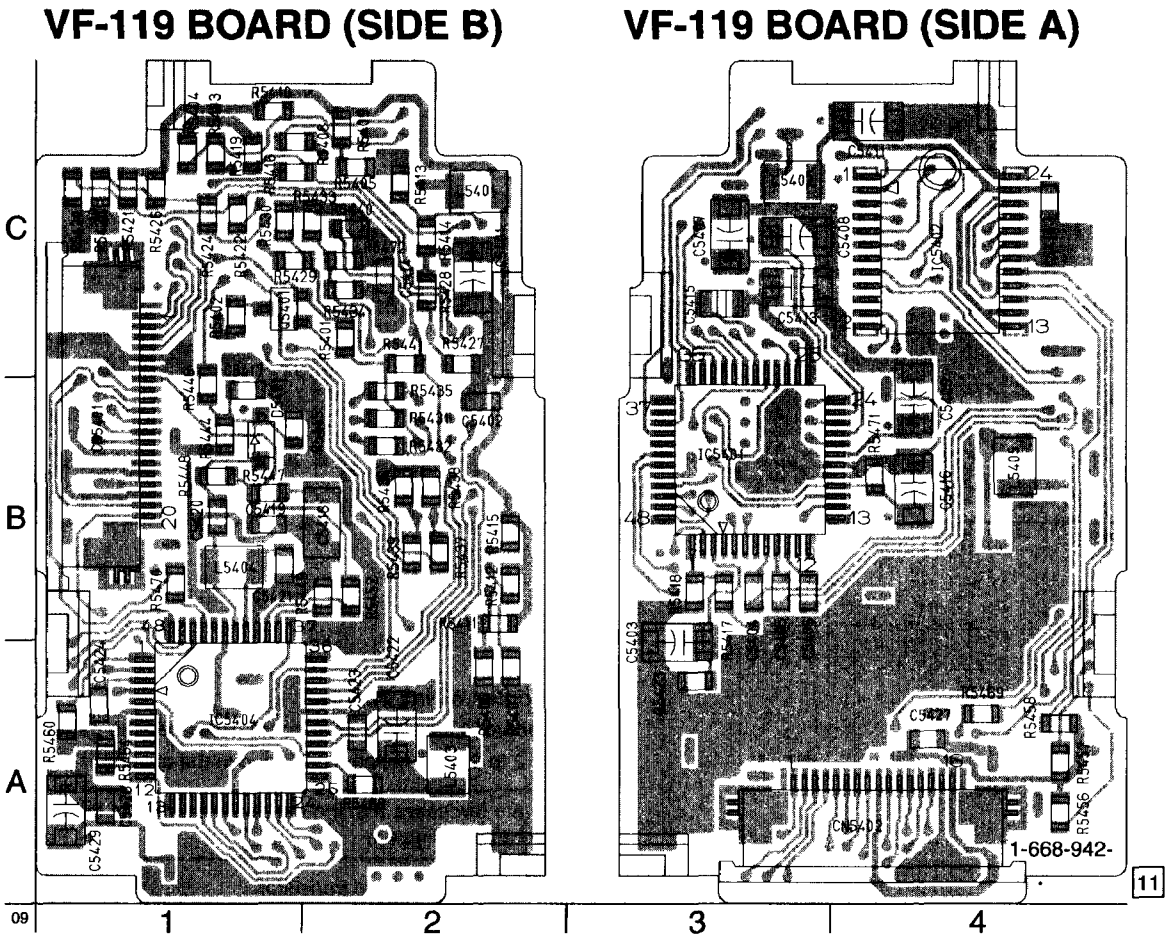
BACK LIGHT, LCD
PD-93 (3/4, 4/4) (3 INCH/3.5 INCH LCD MODEL)

VF-119 BOARD
CAMERA REC



VF-119 (COLOR EVF (COLOR EVF MODEL) PRINTED WIRING BOARD

– Ref No VF-119 BOARD 10,000 series –

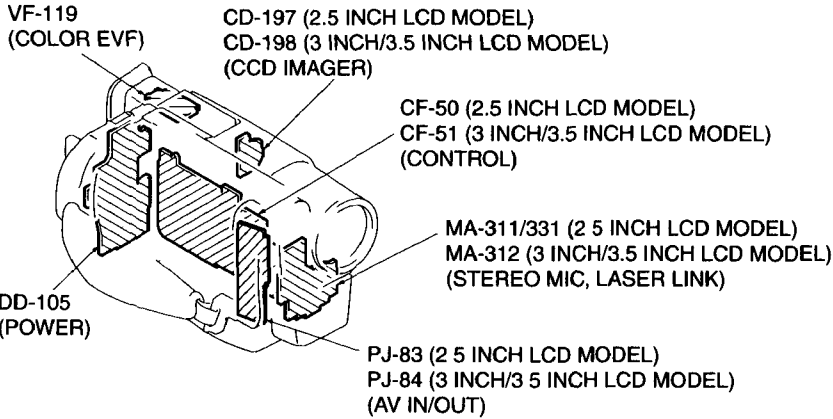


VF-119 BOARD			
C5401	C-2	R5410	C-1
C5402	B-2	R5411	B-2
C5403	A-3	R5412	B-2
C5404	B-3	R5414	C-2
C5405	B-3	R5414	C-2
C5406	B-3	R5415	B-2
C5407	C-3	R5416	C-1
C5408	C-3	R5417	B-3
C5409	B-4	R5418	B-3
C5410	C-4	R5418	C-2
C5411	C-4	R5419	C-1
C5413	C-3	R5420	C-1
C5415	C-3	R5421	C-1
C5416	B-4	R5422	C-1
C5417	B-1	R5423	A-3
C5418	B-2	R5424	C-1
C5419	B-1	R5425	C-1
C5420	B-1	R5426	C-1
C5421	B-1	R5427	C-2
C5422	A-2	R5428	C-2
C5423	A-2	R5429	C-1
C5424	A-1	R5430	C-1
C5427	A-4	R5431	B-2
C5428	A-1	R5432	B-2
C5429	A-1	R5433	C-2
CN5401	B-1	R5434	C-2
CN5402	A-4	R5435	B-2
D5401	B-1	R5436	B-2
IC5401	B-3	R5437	B-2
IC5402	C-4	R5438	B-2
IC5404	A-1	R5439	B-2
L5401	C-2	R5440	C-2
L5402	C-3	R5441	C-2
L5403	A-2	R5444	B-1
L5404	B-1	R5445	B-1
L5405	B-4	R5446	B-1
Q5401	C-1	R5447	B-1
R5401	C-2	R5448	B-1
R5402	C-1	R5449	B-2
R5403	C-1	R5452	B-2
R5404	C-1	R5456	A-4
R5405	C-2	R5457	A-4
R5406	A-2	R5458	A-4
R5407	A-2	R5460	A-1
R5408	C-1	R5464	A-1
R5409	C-2	R5468	A-2
		R5469	A-4
		R5470	B-1
		R5471	B-4
		R5472	C-2

- For Printed Wiring Boards.
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

- Chip transistor

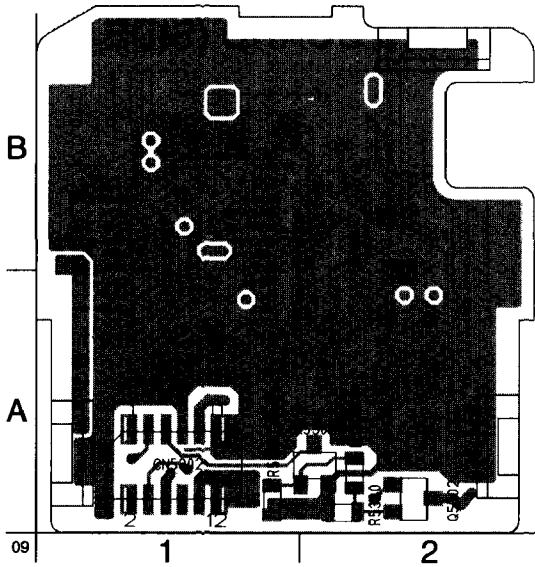


VF-120 (COLOR EVF (COLOR EVF MODEL)), LB-54 (BACK LIGHT) PRINTED WIRING BOARDS
- Ref No VF-120 BOARD: 10,000 series, LB-54 BOARD: 10,000 series -

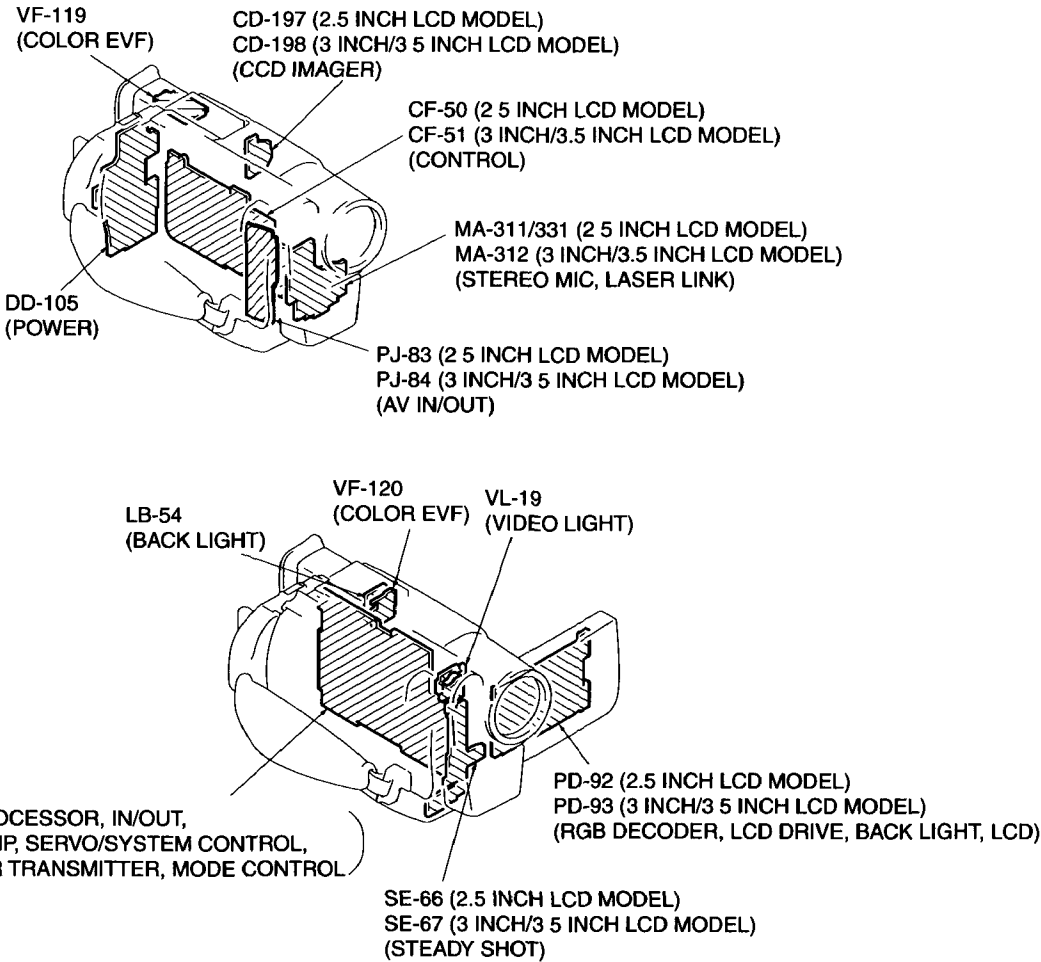
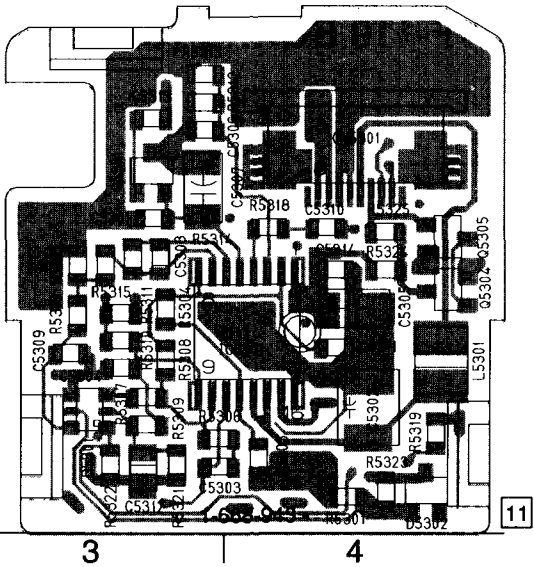
VF-120 BOARD

C5301	B-3	R5304	A-3
C5302	A-4	R5305	A-4
C5303	A-4	R5306	A-4
C5304	A-3	R5307	A-3
C5305	A-4	R5309	A-3
C5306	B-4	R5310	A-3
C5307	B-4	R5311	A-3
C5308	B-3	R5312	B-4
C5309	A-3	R5313	B-4
C5310	B-4	R5314	B-3
C5311	A-4	R5315	B-3
C5312	A-3	R5316	A-3
C5313	B-3	R5317	B-3
		R5318	B-4
CN5301	B-4	R5319	A-4
CN5302	A-1	R5320	A-2
D5301	A-3	R5321	A-3
D5302	A-4	R5322	A-3
		R5323	A-4
IC5301	A-4	R5324	A-4
		R5325	B-4
L5301	A-4		
Q5301	B-3		
Q5302	A-2		
Q5303	A-2		
Q5304	A-4		
Q5305	B-4		
R5302	A-2		
R5302	A-4		
R5303	A-1		
R5303	A-3		

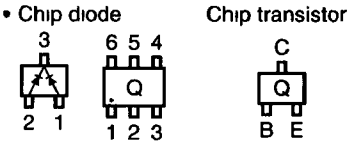
VF-120 BOARD (SIDE B)



VF-120 BOARD (SIDE A)



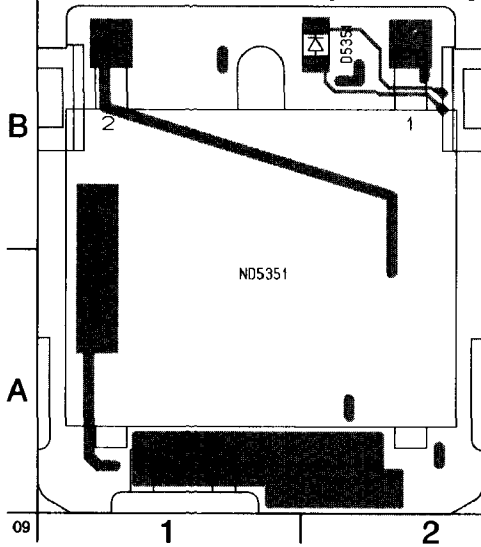
• For Printed Wiring Boards.
• This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.
There are few cases that the part isn't mounted in this model is printed on this diagram



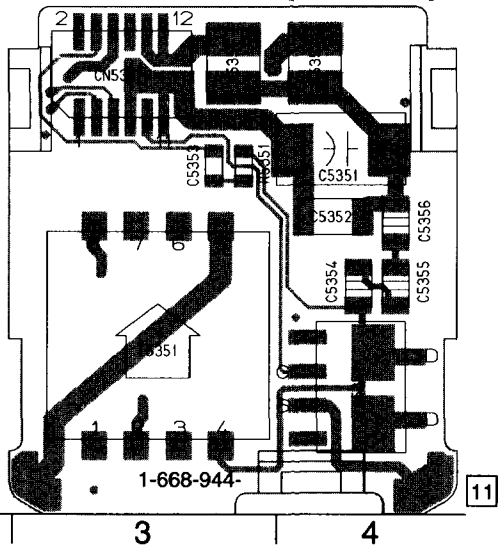
LB-54 BOARD

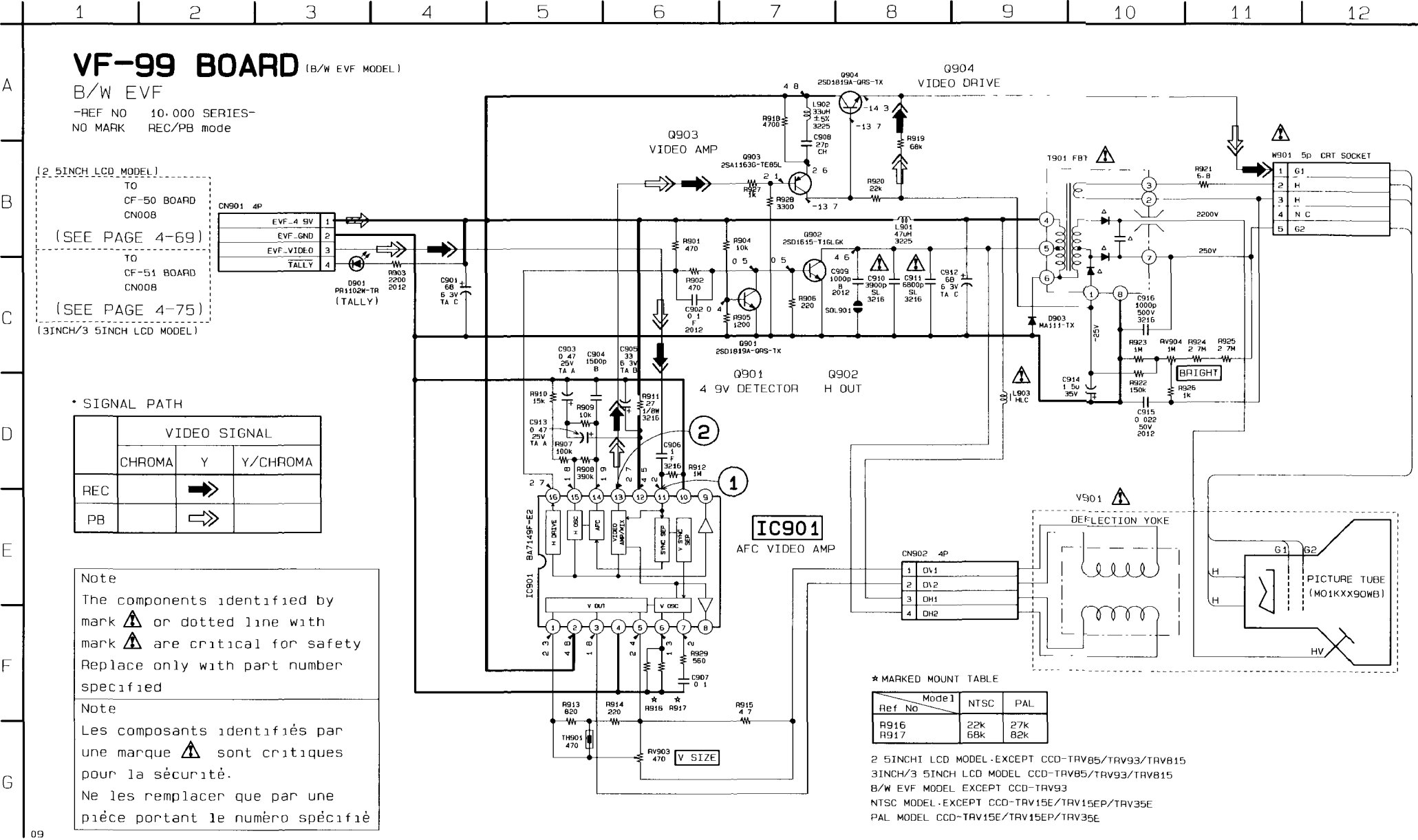
C5351	B-4
C5352	B-4
C5353	B-3
C5354	A-4
C5355	A-4
C5356	B-4
CN5351	B-3
D5351	B-2
L5351	B-3
L5352	B-4
ND5351	A-1
Q5351	A-4
R5351	B-3
T5351	A-3

LB-54 BOARD (SIDE B)

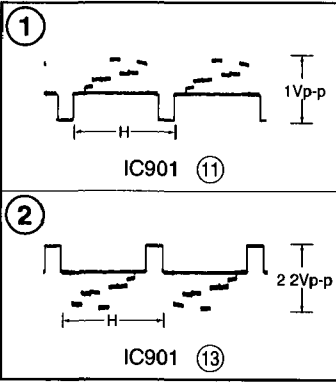


LB-54 BOARD (SIDE A)





VF-99 BOARD
 CAMERA REC

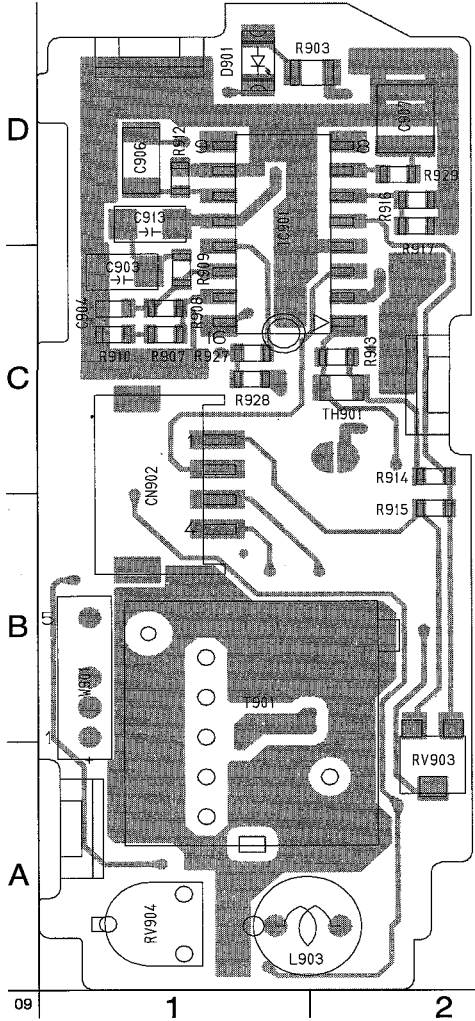


CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/ TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

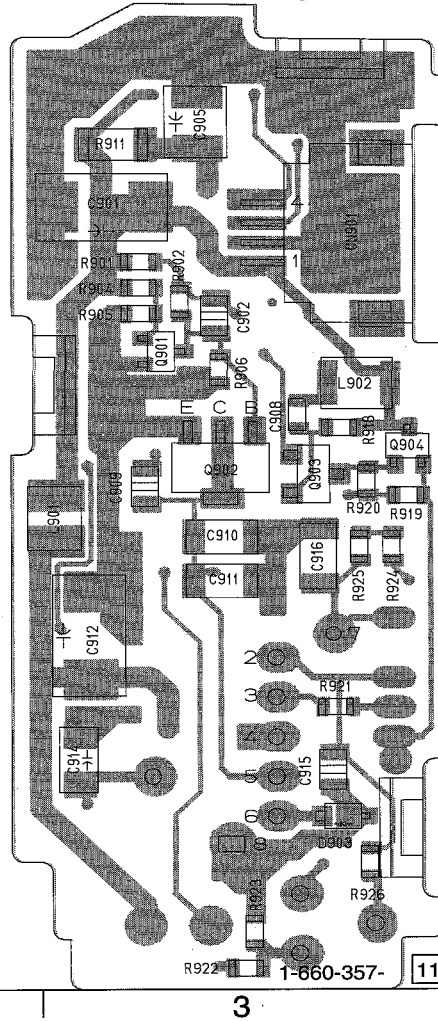
VF-99 (B/W EVF (B/W EVF MODEL)) PRINTED WIRING BOARD

— Ref No. VF-99 BOARD: 10,000 series —

VF-99 BOARD (SIDE B)

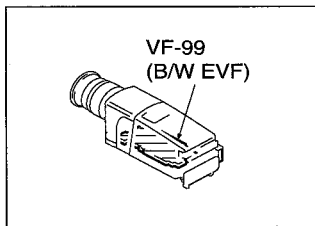


VF-99 BOARD (SIDE A)



VF-99 BOARD

C901	D-3	R919	B-3
C902	C-3	R920	C-3
C903	C-1	R921	B-3
C904	C-1	R922	A-3
C905	D-3	R923	A-3
C906	D-1	R924	B-3
C907	D-2	R925	B-3
C908	C-3	R926	A-3
C909	C-3	R927	C-1
C910	B-3	R928	C-1
C911	B-3	R929	D-2
C912	B-3		
C913	D-1	RV903	A-2
C914	A-3	RV904	A-1
C915	A-3		
C916	B-3	T901	B-1
CN901	D-3	TH901	C-2
CN902	C-1	W901	B-1
D901	D-1		
D903	A-3		
IC901	D-1		
L901	B-3		
L902	C-3		
L903	A-1		
Q901	C-3		
Q902	C-3		
Q903	C-3		
Q904	C-3		
R901	C-3		
R902	C-3		
R903	D-2		
R904	C-3		
R905	C-3		
R906	C-3		
R907	C-1		
R908	C-1		
R909	C-1		
R910	C-1		
R911	D-3		
R912	D-1		
R913	C-2		
R914	C-2		
R915	B-2		
R916	D-2		
R917	D-2		
R918	C-3		



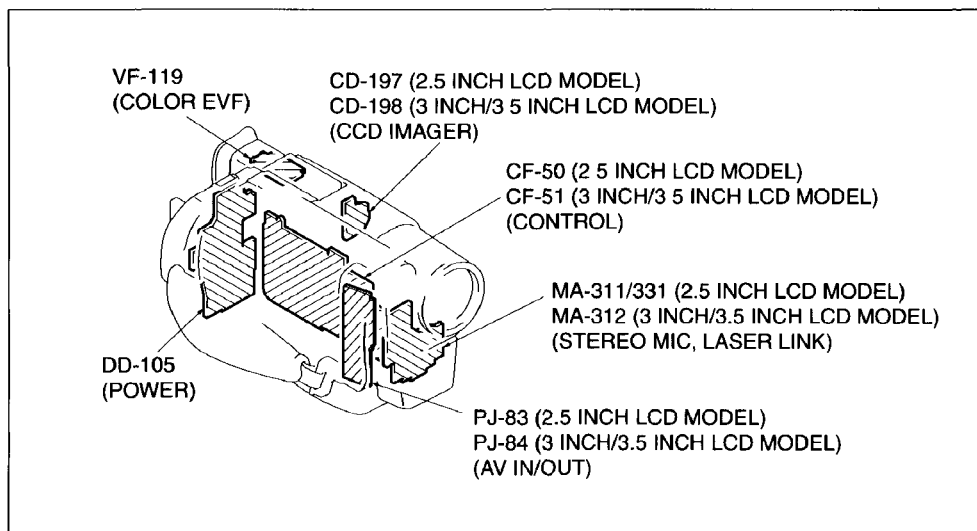
• For Printed Wiring Boards.

- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• Chip transistor





• **For Printed Wiring Boards.**

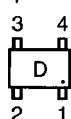
- This board is four-layer print board. However, the patterns of layers 2 to 3 have not been included in the diagram.

There are few cases that the part isn't mounted in this model is printed on this diagram.

• **Chip transistor**



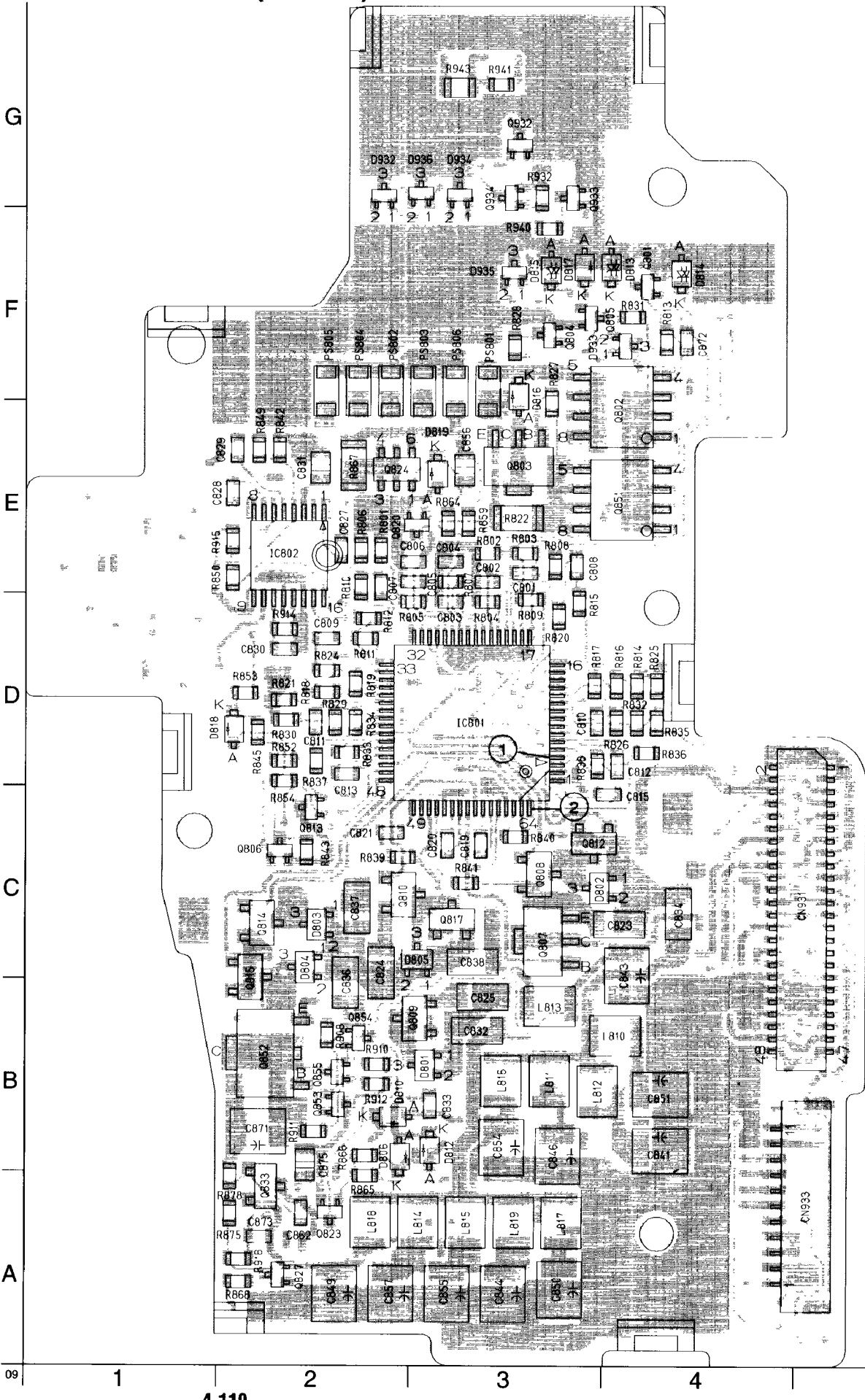
• **Chip diode**



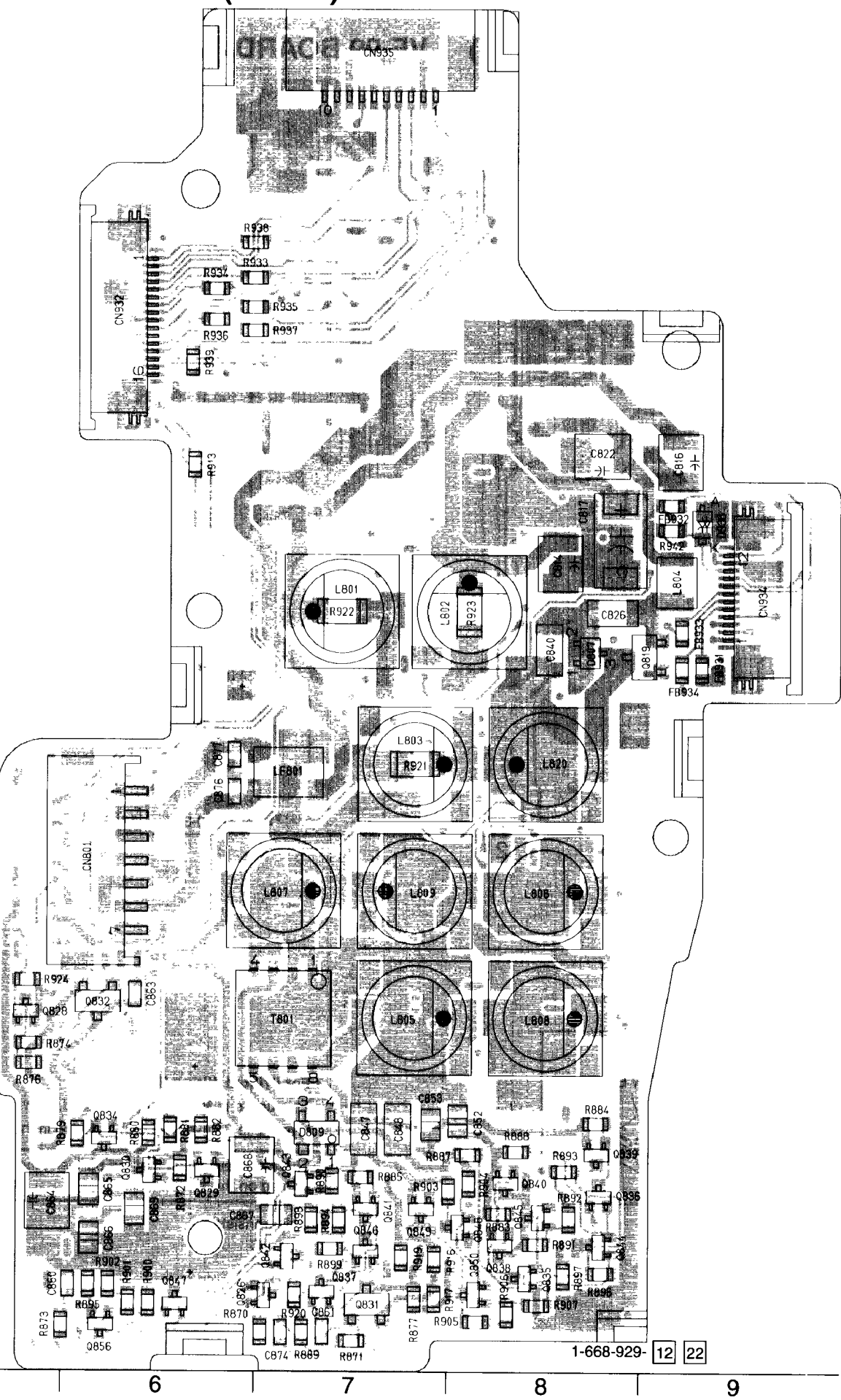
CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/
TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

DD-105 (POWER) PRINTED WIRING BOARD
- Ref No DD-105 BOARD 2,000 series -

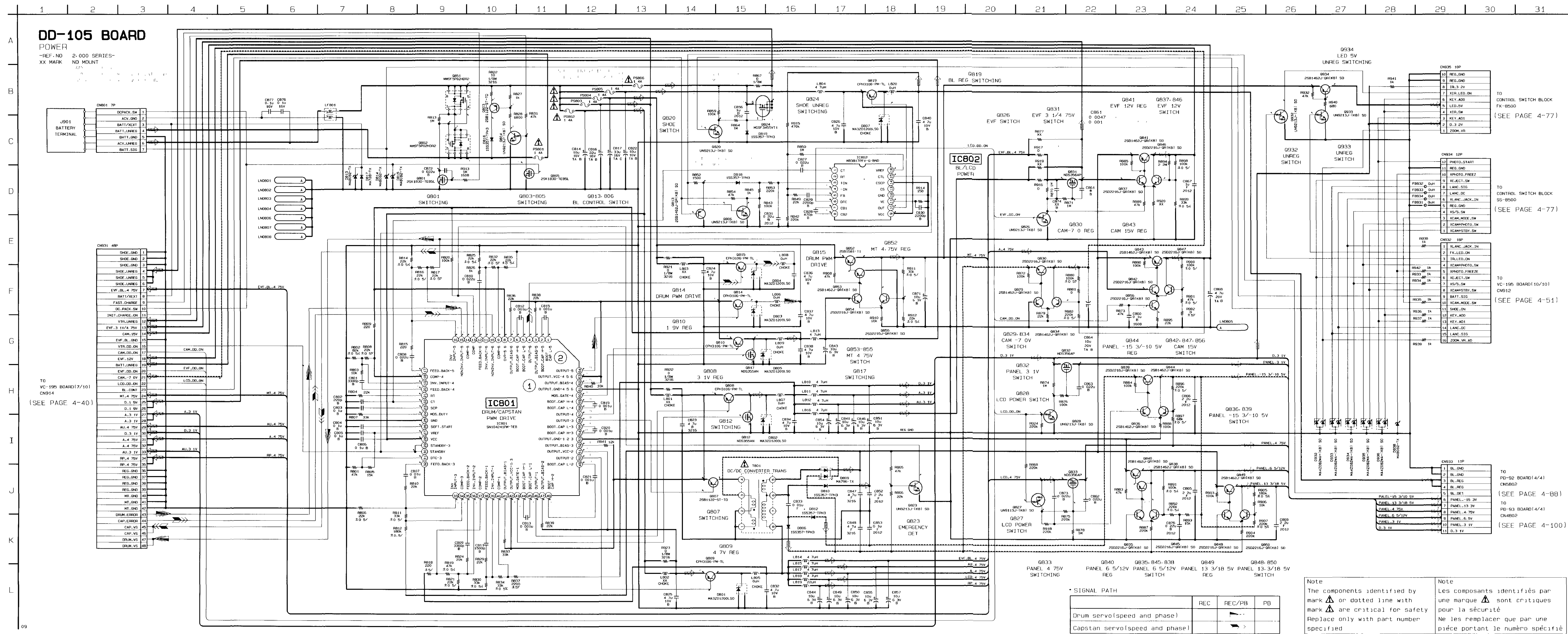
DD-105 BOARD (SIDE B)



DD-105 BOARD (SIDE A)



DD-105 BOARD					
C801	E-3	L801	D-7	R823	D-7
C802	E-3	L802	D-7	R824	D-2
C803	D-3	L803	D-8	R825	D-4
C804	E-3	L804	E-9	R826	D-4
C805	E-3	L805	B-7	R827	E-3
C806	E-3	L806	C-8	R828	F-3
C807	E-2	L807	C-7	R829	D-2
C808	E-3	L808	B-8	R830	D-2
C809	D-2	L809	C-7	R831	F-4
C810	D-3	L810	B-4	R832	D-4
C811	D-2	L811	B-3	R833	D-2
C812	D-4	L812	B-3	R834	D-2
C813	D-2	L813	B-3	R835	D-4
C814	E-8	L814	A-3	R836	D-4
C815	C-4	L815	A-3	R837	D-2
C816	E-9	L816	B-3	R838	D-3
C817	E-8	L817	A-3	R839	C-2
C819	C-3	L818	A-2	R840	C-3
C820	C-3	L819	A-3	R841	C-3
C821	C-2	L820	D-8	R842	E-2
C822	E-8			R843	C-2
C823	C-4	LF801	D-7	R849	E-2
C824	C-2			R850	E-2
C825	B-3	PS801	F-3	R852	D-2
C826	D-8	PS802	F-2	R853	D-2
C827	F-2	PS803	F-3	R854	D-2
C828	E-2	PS804	F-2	R854	D-2
C829	E-2	PS805	F-2	R859	E-3
C830	D-2	PS806	F-3	R864	E-3
C831	E-2			R865	A-2
C832	B-3	Q801	F-4	R866	B-2
C833	B-3	Q802	E-4	R867	E-2
C834	C-4	Q803	E-3	R868	A-2
C836	B-2	Q804	F-3	R870	A-7
C837	C-2	Q805	F-3	R871	A-7
C838	C-3	Q806	C-2	R872	B-6
C840	D-8	Q807	C-3	R873	A-5
C841	B-4	Q808	C-3	R874	B-5
C843	C-4	Q809	B-3	R875	A-2
C844	A-3	Q810	C-2	R876	B-5
C846	B-3	Q812	C-3	R877	A-7
C847	B-7	Q813	C-2	R878	A-2
C848	A-7	Q814	C-2	R879	B-6
C849	A-2	Q815	C-2	R880	B-6
C850	A-3	Q817	C-3	R881	B-6
C851	B-4	Q819	D-8	R882	B-6
C852	B-7	Q820	E-3	R883	A-8
C853	B-7	Q823	A-2	R884	B-8
C854	B-3	Q824	E-2	R885	B-7
C855	A-3	Q826	A-7	R887	B-8
C856	E-3	Q827	A-2	R888	B-8
C857	A-2	Q828	B-5	R889	A-7
C860	A-6	Q829	B-6	R890	A-7
C861	A-7	Q830	B-6	R891	A-8
C862	A-2	Q831	A-7	R892	A-8
C863	B-6	Q832	B-6	R893	B-8
C864	A-5	Q833	A-2	R894	A-7
C866	A-6	Q834	B-6	R895	A-6
C867	A-7	Q835	A-8	R896	A-8
C868	B-6	Q836	A-8	R897	A-8
C869	A-6	Q837	A-7	R898	A-7
C871	B-2	Q838	A-8	R899	A-7
C872	F-4	Q839	B-8	R900	A-6
C873	A-2	Q840	A-8	R901	A-6
C874	A-7	Q841	A-7	R902	A-6
C875	B-2	Q842	A-7	R903	A-8
C876	C-6	Q843	A-7	R904	A-8
C877	D-6	Q844	A-8	R905	A-8
C885	A-6	Q845	A-8	R906	A-8
		Q846	A-7	R907	A-8
CN801	C-6	Q847	A-6	R908	B-2
CN831	C-5	Q848	A-8	R910	B-2
CN832	F-6	Q849	A-7	R911	B-2
CN833	A-4	Q850	A-8	R912	B-2
CN834	D-9	Q851	E-4	R913	E-6
CN835	G-7	Q852	B-2	R914	D-2
		Q853	B-2	R915	E-2
D801	B-3	Q854	B-2	R916	A-7
D802	C-3	Q855	B-2	R917	A-7
D803	C-2	Q856	A-6	R918	A-2
D804	C-2	Q932	G-3	R919	A-7
D805	C-3	Q933	G-3	R920	A-7
D806	B-2	Q934	G-3	R924	C-5
D807	D-8			R932	G-3
D809	B-7	R801	E-2	R933	F-7
D810	B-2	R802	E-3	R934	F-6
D812	B-3	R803	E-3	R935	F-7
D813	F-4	R804	D-3	R936	F-6
D814	F-4	R805	D-3	R937	F-7
D815	F-3	R807	E-3	R938	F-7
D816	E-3	R808	E-2	R939	F-6
D817	F-3	R808	E-3	R940	F-3
D818	D-2	R809	D-3	R941	G-3
D819	E-3	R810	E-2	R942	E-9
D838	E-9	R811	D-2	R943	G-3
D932	G-2	R812	D-2		
D933	F-4	R813	F-4	T801	B-7
D934	G-3	R814	D-4		
D935	F-3	R815	D-3		
D936	G-3	R816	D-4		
		R817	D-3		
FB931	D-9	R818	D-2		
FB932	E-9	R819	D-2		
FB933	D-9	R820	D-3		
FB934	D-9	R821	D-2		
		R822	E-3		
IC801	D-3	R822	D-7		
IC802	E-2	R822	D-8		



CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/ TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

SECTION 5 ADJUSTMENTS

Refer to page 3 as Table for distinction
functions of models and classification

5-1. CAMERA SECTION ADJUSTMENTS

1-1. PREPARATIONS BEFORE ADJUSTMENT (CAMERA SECTION)

1-1-1. List of Service Tools

- Oscilloscope
- Color monitor
- Vectorscope
- Adjusting driver
- Regulated power supply
- Digital voltmeter

Ref. No	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Adjusting remote commander (RM-95-remodeled partly) Note 1	J-6082-053-B	
J-6	Siemens star	J-6080-875-A	For checking the flange back
J-7	Multi CPC jig	J-6082-311-A	For adjusting LCD block
J-8	CPC-7 jig	J-6082-382-A	For the color viewfinder adjustment For adjusting the video section
J-9	Power code Note 2	J-6082-223-A	For connecting the battery terminal and DC power supply
J-10	AFM DEV jig	J-6082-312-A	For adjusting the deviation
J-11	Clear chart	J-6080-621-A	
J-12	Extension cable (16P, 0.5 mm)	J-6082-357-A	For extension between the CD-197/198 board (CN401) and VC-195 board (CN501)
J-13	IR receiver jig	J-6082-383-A	For adjusting the IR transmitter
J-14	Extension cable (48P, 0.8 mm)	J-6082-188-A	For extension between the DD-105 board (CN401) and VC-195 board (CN914)

Note 1: If the micro processor IC in the adjusting remote commander is not the new micro processor (UPD7503G-C56-12), the pages cannot be switched. In this case, replace with the new micro processor (8-759-148-35).

Note 2: Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side

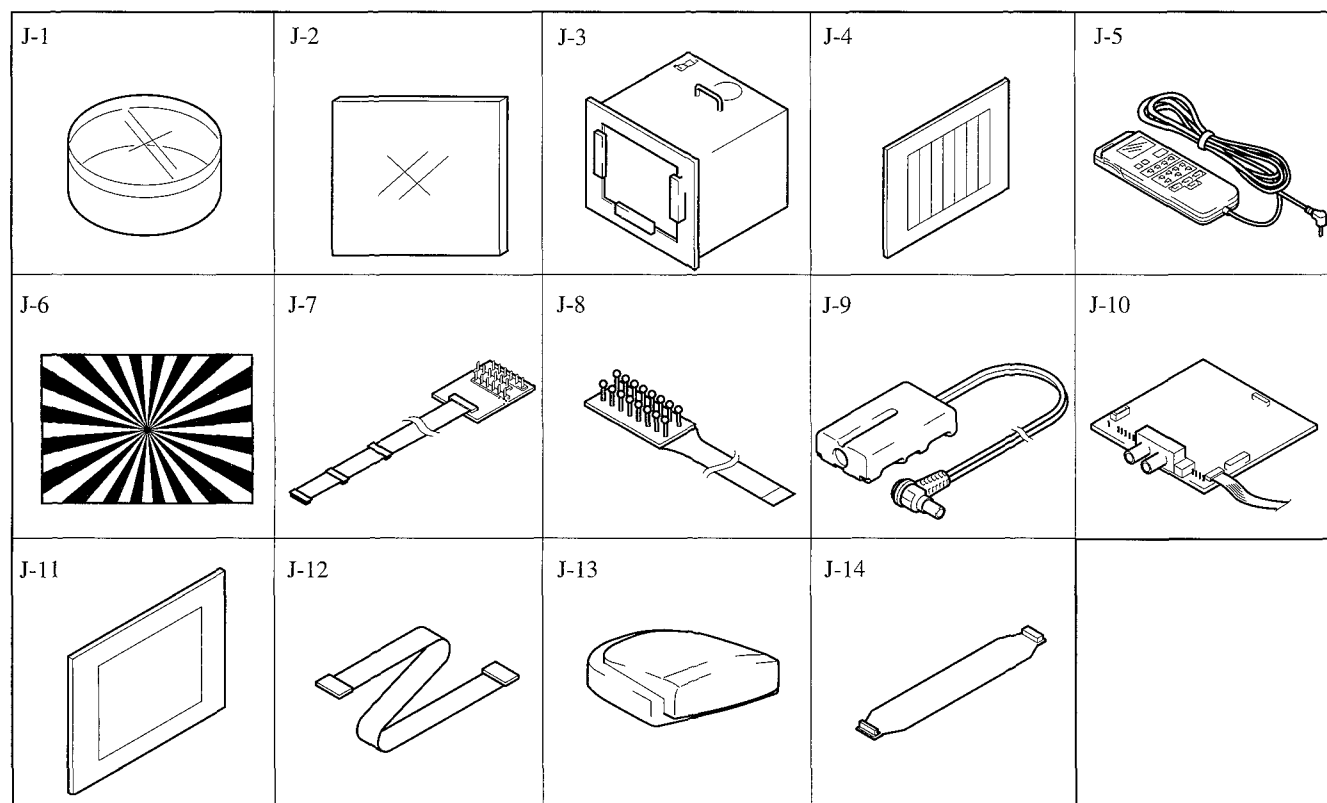


Fig. 5-1-1.

1-1-2. Preparations

Note 1: For details of how remove the cabinet and boards, refer to “2. DISASSEMBLY”.

Note 2: When performing only the adjustments, the lens block and boards need not be disassembled.

- 1) Connect the equipment for adjustments according to Fig. 5-1-3, 4.
- 2) By setting the “Forced Camera Power ON mode”, the camera power can be turned ON even if the front panel block (MA-311/312/331 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector.
 1. VC-195 board CN903 (23P 0.5mm)
- 3) The intelligent accessory shoe (Intelligent accessory shoe model) or video light (Video light model) need not be assembled. If removing it, disconnect the following connector.
 1. VC-195 board CN909 (10P, 0.5mm)

Note 3: As removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-50/51 board), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use. (Refer to the “Service Mode” of “VIDEO SECTION ADJUSTMENT” for the data on the history use.)

Note 4: Setting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 01, and press the PAUSE button of the adjusting remote commander.
The above procedure will enable the camera power to be turned on with the front panel block removed. After completing adjustments, be sure to exit the “Forced Camera Power ON Mode”.

Note 5: Exiting the “Forced Camera Power ON” Mode

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 10, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: 0, address: 01, and set data: 00.

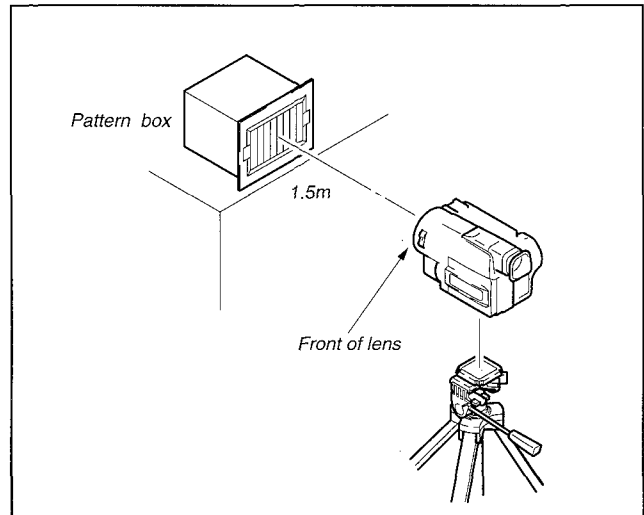


Fig. 5-1-2.

2.5 INCH LCD MODEL

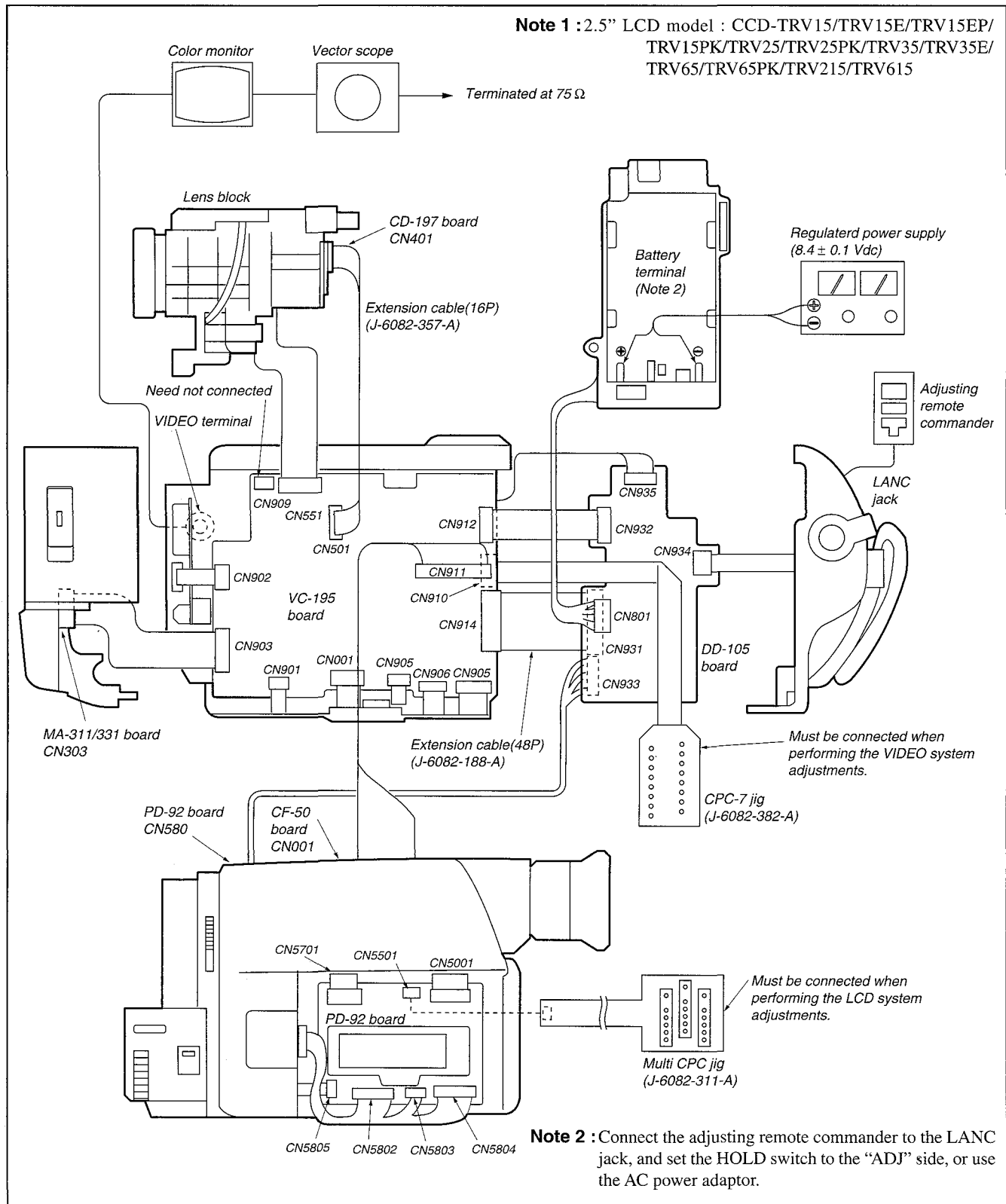


Fig. 5-1-3.

3/3.5 INCH LCD MODEL

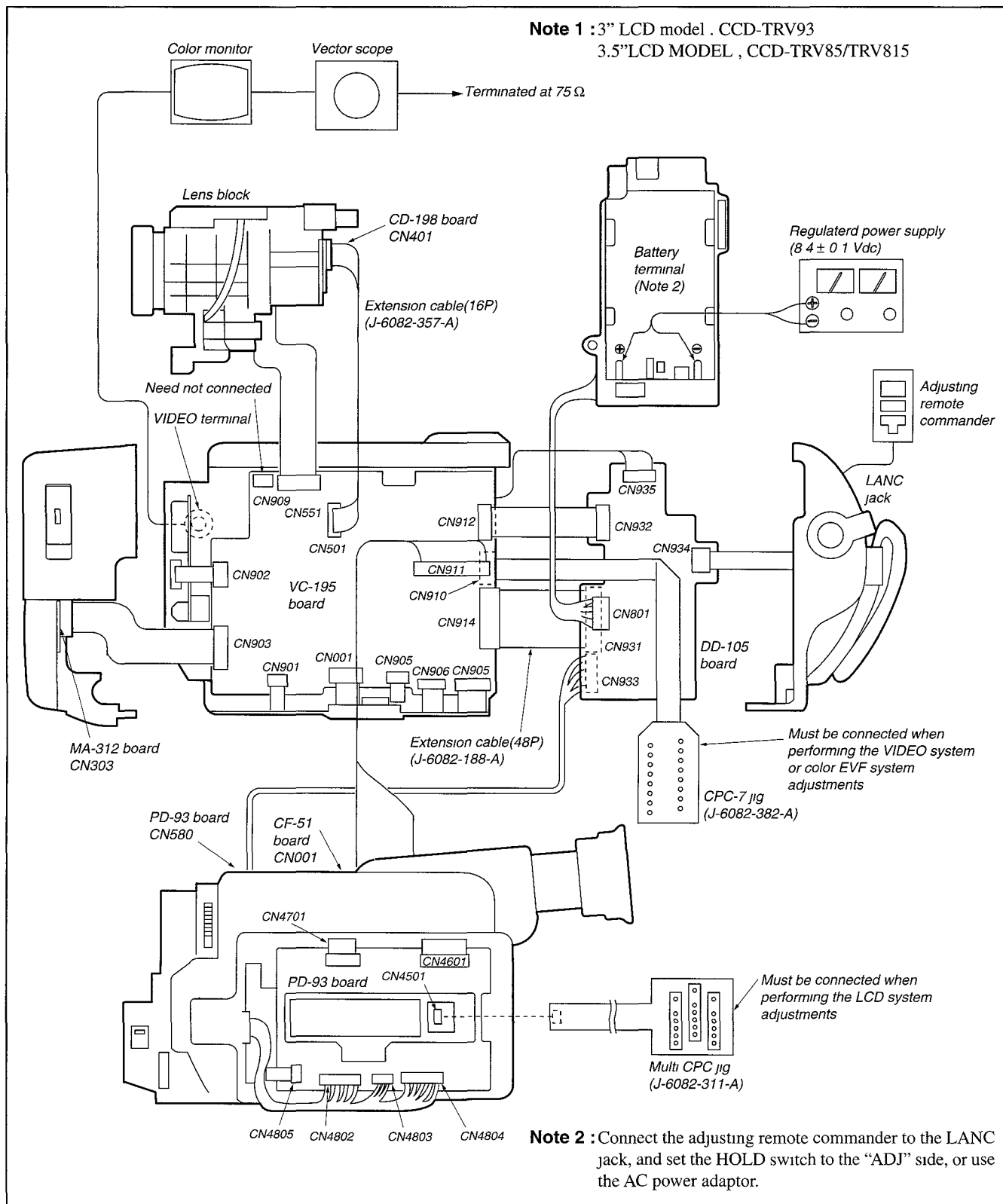


Fig. 5-1-4.

1-1-3.Precaution

1. Setting the Switch

Unless otherwise specified, set the switches as follows and perform adjustments without loading cassette.

- | | | | |
|--|--------|---|-----------|
| 1. POWER switch (MA-311/312/331 board) | CAMERA | 7. DISPLAY (Menu display) | V-OUT/LCD |
| 2. NIGHT SHOT switch (Lens Block) | OFF | 8. FOCUS switch (MF-8500/MR-8500) | |
| (Night shot model) | | (Manual Focus model) | MANUAL |
| 3. VIDEO LIGHT switch (MA-312 board) | OFF | 9. PROGRAM AE (CF-50/51 board) | Auto |
| (Video light model) | | 10. BACK LIGHT (CF-50/51 board) | OFF |
| 4. DEMO MODE (Menu display) | OFF | 11. PICTURE EFFECT (CF-50/51 board) | OFF |
| 5. DIGITAL ZOOM (Menu display) | OFF | 12. 16 : 9 WIDE (MENU display) | OFF |
| 6. STEADY SHOT (Menu display) | OFF | | |

2. Adjusting Procedure

Adjust in the given order.

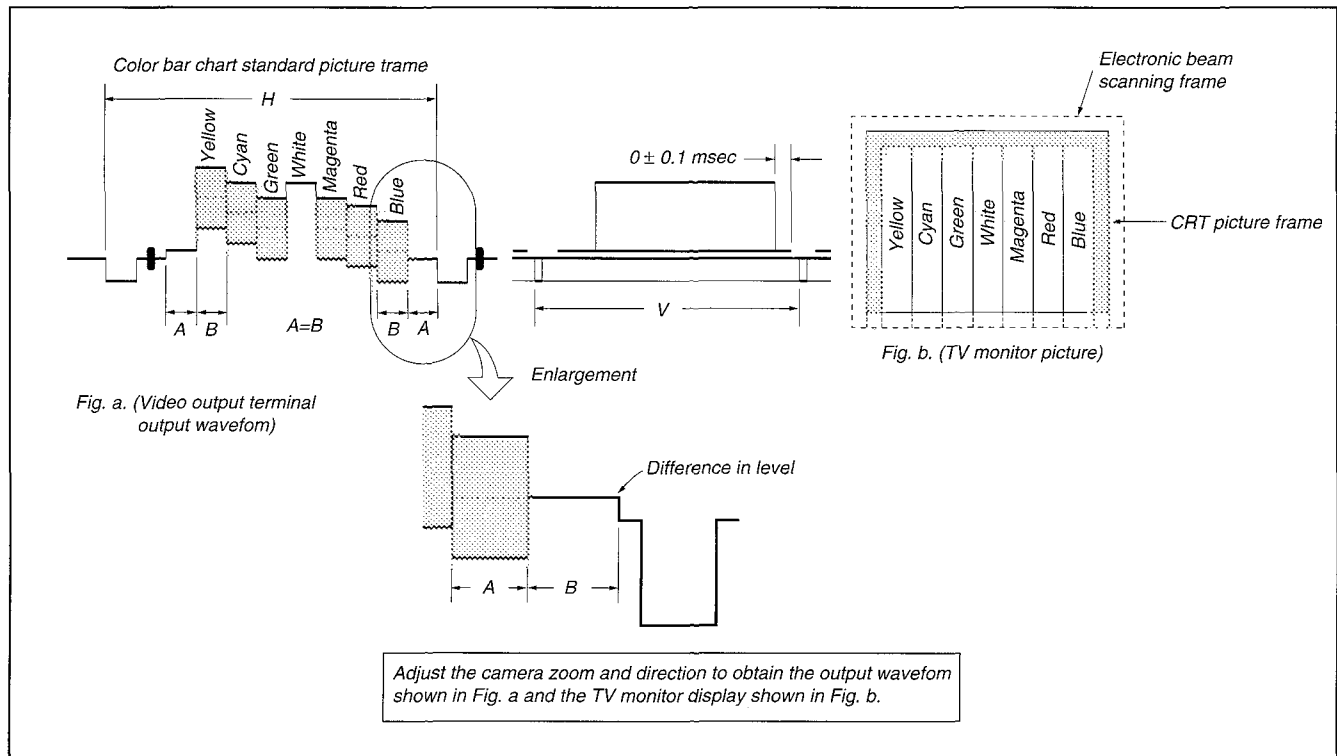
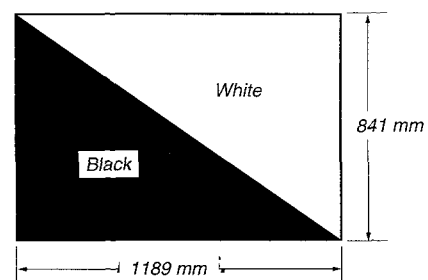


Fig. 5-1-5.

3. Subject

- 1) Color bar chart (Standard picture frame)
Adjust the picture frame as shown in Fig. 5-1-5. if adjustments are performed using the color bar chart.
(Standard picture frame)
- 2) White pattern (Standard picture frame)
Remove the color bar chart from the pattern box, and insert a clear chart in its place. (Do not perform zoom operations during this time.)
- 3) Chart for flange back adjustment
Combine a white A0 size (1189 mm x 841 mm) paper to a black one, and make the chart shown in Fig. 5-1-6.



Note : Use the non-reflecting and non-glazing vellum paper whose size is more than A0, and make the boundary between white and black to be smoothly flat.

1-1-4. Adjusting Remote Commander

The adjusting remote commander is used for changing the calculation coefficient in signal processing, EVR data, etc. The adjusting remote commander performs bi-directional communication with the unit using the remote commander signal line (LANC). The resultant data of this bi-directional communication is written in the non-volatile memory.

1. Using the adjusting remote commander

- 1) Connect the adjusting remote commander to the LANC terminal.
- 2) Adjust the HOLD switch of the adjusting remote commander to "HOLD" (SERVICE position).

If it has been properly connected, the LCD on the adjusting remote commander will display as shown in Fig. 5-1-7.

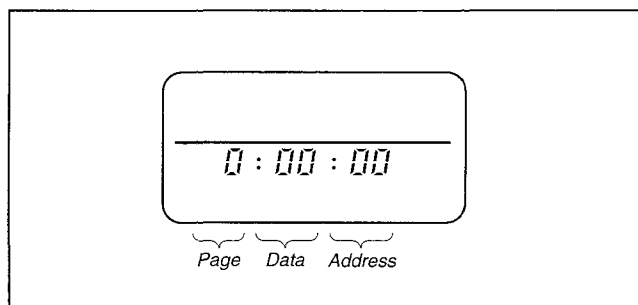


Fig. 5-1-7.

- 3) Operate the adjusting remote commander as follows.

- Changing the page

The page increases when the EDIT SEARCH+ button is pressed, and decreases when the EDIT SEARCH- button is pressed. There are altogether 16 pages, from 0 to F.

Hexadecimal notation	0 1 2 3 4 5 6 7 8 9 A B C D E F
LCD Display	0 1 2 3 4 5 6 7 8 9 A b c d E F
Decimal notation conversion value	0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Table 5-1-1.

- Changing the address

The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. There are altogether 256 addresses, from 00 to FF.

- Changing the data (Data setting)

The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. There are altogether 256 data, from 00 to FF.

- Writing the adjustment data

The PAUSE button must be pressed to write the adjustment data (D, E, F page) in the nonvolatile memory. (The new adjustment data will not be recorded in the nonvolatile memory if this step is not performed.)

- 4) Select page 0, address 01, and set the data to 01, and enables Page D and E, F to be adjusted.
- 5) After completing all adjustments, set data 00 to page 0, address 01 and turn off the main power supply (8.4V) once.

2. Precautions upon using the adjusting remote commander

Mishandling of the adjusting remote commander may erase the correct adjustment data at times. To prevent this, it is recommended that all adjustment data be noted down before beginning adjustments and new adjustment data after each adjustment.

1-1-5. Data Processing

The calculation of the DDS display and the adjusting remote commander display data (hexadecimal notation) are required for obtaining the adjustment data of some adjustment items. In this case, after converting the hexadecimal notation to decimal notation,

calculate and convert the result to hexadecimal notation, and use it as the adjustment data. Table 5-1-2. indicates the hexadecimal notation-the decimal notation calculation table.

Hexadecimal notation-Decimal notation																②
The lower digits of the hexadecimal notation The upper digits of the hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A (<i>A</i>)	B (<i>b</i>)	C (<i>c</i>)	D (<i>d</i>)	E (<i>E</i>)	F (<i>F</i>)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A (<i>A</i>)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B (<i>b</i>)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C (<i>c</i>)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D (<i>d</i>)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E (<i>E</i>)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F (<i>F</i>)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note: () indicate the adjusting remote commander display

(Example) In the case that the DDS display and the adjusting remote commander display are BD (*bd*)
As the upper digit of the hexadecimal notation is B (*b*), and the lower digit is D (*d*), the intersection “189” of the ① and ② in the above table is the decimal notation to be calculated

Table 5-1-2.

1-2. INITIALIZATION OF D, E, F PAGE DATA

1. Initializing the D,E,F Page Data

Note 1: If “Initializing the D, E, F Page Data” is performed, all data of the D page, E page and F page will be initialized. (It is impossible to initialize a single page.)

Note 2: If the D,E,F page data has been initialized, “Modification of D, E, F Page Data” and all adjustments need to be performed again.

Note 3: < > : NTSC model (CCD-TRV15/TRV15PK/TRV25/TRV25PK/TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV815/TRV815)

[] : PAL model (CCD-TRV15E/TRV15EP/TRV35E)

Adjusting page	D
Adjusting Address	00 to 6F
Adjusting page	F
Adjusting Address	00 to FF
Adjusting page	E
Adjusting Address	00 to FF

Initializing Method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 00, and set data: 55 <NTSC> or data : 51 [PAL].
- 3) Select page: 2, address: 01, set data: 55<NTSC> or data : 51 [PAL], and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 02, and check that the data is 01.
- 5) Select page: 3, address: 00, and set data: 29.
- 6) Select page: 3, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
- 7) Select page: 0, address: 01, and set data: 00.
- 8) Perform “Modification of D,E,F Page Data”.

2. Modification of D, E, F Page Data

If the D, E, F page data has been initialized, change the data of the “Fixed data-2” address shown in the following tables by manual input.

Modifying Method:

- 1) Before changing the data, select page: 0, address: 01, and set data: 01.
- 2) New data for changing are not shown in the tables because they are different in destination. When changing the data, copy the data built in the same model.

Note : If copy the data built in the different model, the camcorder may not operate.

- 3) When changing the data, press the PAUSE button of the adjusting remote commander each time when setting new data to write the data in the non-volatile memory.
- 4) Check that the data of adjustment addresses is the initial value. If not, change the data to the initial value.
- 5) After completing “Modification of D, E, F Page Data” select page: 0, address: 01, and set data: 00. Also perform all adjustments.

3. D Page Table

Note1 :

Fixed data-1 : Initialized data.

(Refer to “1. Initializing the D,E,F Page Data”.)

Fixed data-2 : Modified data.

(Refer to “2. Modification of D, E, F Page Data”).

Address	Initial Value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Fixed data-1 (Initialized data)
11	00	00	
12	00	00	
13			Fixed data-2 (Modified data, copy the data built in the same model.)
14			
15			
16			
17			
18			
19			
1A			
1B			
1C			
1D			
1E			
1F			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
2A			Fixed data-1 (Initialized data)
2B			
2C			
2D			
2E			Fixed data-2
2F			
30	88	88	Battery end adj.
31	8D	8D	
32	A8	A8	
33	BD	BD	
34	C8	C8	Fixed data-2 (Modified data, copy the data built in the same model.)
35			
36			
37			
38			
39			
3A			
3B			
3C			
3D			
3E			
3F			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
4A			

Address	Initial Value		Remark
	NTSC	PAL	
4B			Fixed data-1 (Initialized data)
4C			
4D			
4E			
4F			
50			Fixed data-2 (Modified data, copy the data built in the same model.)
51			
52			
53			
54			
55			
56			
57			
58			
59			
5A			
5B			
5C			
5D			
5E			
5F			
60			Fixed data-1 (Initialized data)
61			
62			
63			
64			
65			
66			
67			
68			
69			
6A			
6B			
6C			
6D			
6E			
6F			

4. F Page table

Note 1:

Fixed data-1 : Initialized data.

(Refer to “1. Initializing the D,E,F Page Data”).

Fixed data-2 : Modified data.

(Refer to “2. Modification of D, E, F Page Data”).

Note 2: There are four models classified by CCD imager types as shown below, and the initial value of adjustment is different according to the model.

NTSC 510H model : CCD-TRV15/TRV15PK

NTSC 760H model : CCD-TRV25/TRV25PK/TRV35/TRV65/
TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

PAL 510H model : CCD-TRV15E/TRV15EP

PAL 760H model : CCD-TRV35E

Note 3 : There are three models classified by VTR formats as shown below, and the initial value of adjustment is different according to the model.

NTSC HI8 model : CCD-TRV65/TRV65PK/TRV85/TRV93/
TRV615/TRV815

NTSC Standard8 model : CCD-TRV15/TRV15PK/TRV25/
TRV25PK/TRV35/TRV215

PAL Standard8 model : CCD-TRV15E/TRV15EP/TRV35E

Address	Initial Value		Remark
	NTSC	PAL	
00 to 0F			
10	00	00	Emergency memory address
11	00	00	
12	00	00	
13	00	00	
14	00	00	
15	00	00	
16	00	00	
17	00	00	
18	00	00	
19	00	00	
1A	00	00	
1B	00	00	
1C	Fixed data-2		
1D			
1E			
1F			
20			
21	D2	<D2> [D0]	G-CAM flip adj. <> : CCD-TRV35E [] : CCD-TRV15E/TRV15EP
22	Fixed data-2		
23			
24	Fixed data-1		
25			(Color reproduction adj.)
26	Fixed data-2		
27			
28			
29	Fixed data-1		
2A			
2B	Fixed data-2		
2C			28MHz origin osc. adj.
2D	Fixed data-2		
2E			
2F	80	80	Hall adj.
30	80	80	
31	18/08	18/08	
32	Fixed data-1		Max gain adj. Note 2 : 510H model/ 760H model
33			
34	1B	1B	Color reproduction adj.
35	Fixed data-1		
36			Color reproduction adj.
37	Fixed data-1		
38			
39			

Address	Initial Value		Remark
	NTSC	PAL	
3A	89	89	Auto white balance adj.
3B	59	59	
3C	38	38	IRIS IN/OUT adj.
3D	41	41	
3E	25	25	Flange back adj.
3F	00	00	
40	19	19	
41	00	00	
42	35	35	
43	52	52	Angular velocity sensor sensitivity adj.
44	52	52	
45	7A	7A	1.5MHz deviation adj.
46	8D	8D	1.7MHz deviation adj.
47	7A	7A	BPF f0 adj.
48	Fixed data-1		
49			
4A	40	40	Y OUT level adj.
4B	9A	9A	AFC f0 adj.
4C	Fixed data-1		
4D			
4E	7B	7B	Filter f0 adj.
4F	60	60	RP filter f0 adj.
50	Fixed data-1		
51			
52			
53			
54	40	40	REC Y current adj. (Addresses 57 to 5A are fixed) data addresses. Note 3 : HI8 model/ Standard8 model
55	5F	40	
56	A0/80	80	
57	5F	40	
58	80	80	
59	90/80	80	
5A	80	80	
5B	50	50	
5C	50	50	
5D	43	50	
5E	43	50	REC L level adj. (Addresses 63 to 64 are fixed) data addresses. Note 3 : HI8 model/ Standard8 model
5F	66	66	
60	66	66	
61	67	66	
62	67	66	
63	7C/80	80	
64	78/80	80	
65	80	80	
66	41	41	
67	33	33	
68	C7	C7	IR video deviation Adj.
69	3C	3C	
6A	Fixed data-2		CAP FG offset adj.
6B			
6C	Fixed data-1		
6D			
6E			
6F			
70	3B	3B	AWB standard data input adj.
71	FF	FF	
72	56	56	
73	7D	7D	
74	Fixed data-1		
75			
76	1B	1B	Flange back adj.
77	54	54	
78	25	25	
79	80	80	
7A	10	10	
7B	FF	FF	

Address	Initial Value		Remark
	NTSC	PAL	
7C	0A	0A	Switching position adj.
7D	00	00	
7E	0A	0A	
7F	00	00	
80			Fixed data-2
81			
82			Fixed data-1
83			
84			Fixed data-2
85			Fixed data-1
86			Fixed data-2
87			Fixed data-1
88			
89			
8A			
8B			
8C			
8D			
8E			Fixed data-2
8F			Fixed data-1
90			
91			
92			
93			
94			Fixed data-2
95			
96			Fixed data-1
97			
98			Fixed data-2
99			Fixed data-1
9A			Fixed data-2
9B			Fixed data-1
9C			Fixed data-2
9D			Fixed data-1
9E			Fixed data-2
9F			Fixed data-1
A0			Fixed data-2
A1			
A2			
A3			
A4			
A5			Fixed data-1
A6			Fixed data-2
A7			
A8			
A9			
AA			Fixed data-1
AB			
AC			Fixed data-2
AD			Fixed data-1
AE			Fixed data-2
AF			Fixed data-1
B0			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB			
BC			
BD			

Address	Initial Value		Remark
	NTSC	PAL	
BE			Fixed data-2
BF			
C0			Fixed data-1
C1			
C2			
C3			
C4			
C5			Fixed data-2
C6			Fixed data-1
C7			
C8			Fixed data-2
C9			
CA			Fixed data-1
CB			
CC			
CD			
CE			
CF			
D0			
D1			
D2			
D3			
D4			
D5			
D6			
D7			
D8			
D9			Fixed data-2
DA			Fixed data-1
DB			
DC			Fixed data-2
DD			Fixed data-1
DE			
DF			
E0			
E1			
E2			
E3			Fixed data-2
E4			
E5			Fixed data-1
E6			Fixed data-2
E7			Fixed data-1
E8			
E9			
EA			
EB			Fixed data-2
EC			
ED			Fixed data-1
EE			
EF			
F0			
F1			
F2			Fixed data-2
F3			Fixed data-1
F4			
F5	FF	FF	Color reproduction adj.
F6	F6	F4	
F7			Fixed data-1
F8			
F9			
FA			
FB			
FC			
FD			
FE			
FF			

5. E Page Table

Note 1:

Fixed data-1 : Initialized data.

(Refer to “1. Initializing the D,E,F Page Data”.)

Fixed data-2 : Modified data.

(Refer to “2. Modification of D, E, F Page Data”).

Note 2: See “1-7. LCD SYSTEM ADJUSTMENT”.

Address	Initial Value		Remark
	NTSC	PAL	
00			Fixed data-1
01			
02			
03			
04			
05			
06			
07			
08			
09			
0A			
0B			
0C			
0D			
0E			
0F			
10			
11			
12			
13			
14			Fixed data-2
15			Fixed data-1
16			
17			
18			
19			
1A			
1B			
1C			
1D			
1E			
1F			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
2A			
2B			Fixed data-2
2C			Fixed data-1
2D			
2E			
2F			
30			
31			Fixed data-1
32			
33			
34			
35			
36			
37			

Address	Initial Value		Remark
	NTSC	PAL	
38			Fixed data-2
39			
3A			
3B			Fixed data-1
3C			
3D			
3E			
3F			
40			
41			
42			
43			
44			
45			
46			
47			
48			
49			
4A			
4B			
4C			
4D			
4E			
4F			Fixed data-2
50			Fixed data-1
51			Fixed data-2
52			Fixed data-1
53			
54			
55			
56			
57			
58			
59			Fixed data-2
5A			Fixed data-1
5B			
5C			Fixed data-2
5D			Fixed data-1
5E			
5F			
60			Fixed data-2
61			
62			
63			
64			
65			
66			
67			
68			Fixed data-1
69			
6A			
6B			Fixed data-2
6C			
6D			Fixed data-1
6E			Fixed data-2
6F			
70			
71			
72			
73			Fixed data-1
74			Fixed data-2
75			Fixed data-1
76			Fixed data-2
77			Fixed data-1
78			
79			
80			
81			
82			
83			
84			
85			Fixed data-1
86			
87			
88			
89			
90			
91			
92			
93			Fixed data-1
94			
95			
96			
97			
98			
99			

Address	Initial Value		Remark
	NTSC	PAL	
9A			Fixed data-2
9B			Fixed data-1
9C			Fixed data-2
9D			Fixed data-1
9E			
9F			
A0			Fixed data-2
A1			
A2			
A3			
A4			Fixed data-1
A5			
A6			
A7			
A8			
A9			
AA			
AB			
AC			
AD			
AE			
AF			
B0			
B1			
B2			
B3			
B4			
B5			
B6			
B7			
B8			
B9			
BA			
BB			
BC			Fixed data-2
BD			
BE			
BF	Note2	Note2	Fixed data (NTSC model) VCO adj. (LCD) (PAL model)
C0			Fixed data-2
C1			
C2	B0	B0	VCO adj. (Color EVF)
C3	80	80	Bright adj. (Color EVF)
C4	77	77	Contrast adj. (Color EVF)
C5	80	80	White balance adj. (Color EVF)
C6	80	80	
C7			Fixed data-2
C8			
C9			
CA			
CB			Fixed data-1
CC	B0	B0	Backlight consumption current adj. (Color EVF)
CD			Fixed data-1
CE			
CF			Fixed data-2
D0	Note 2	Note2	Bright adj. (LCD)
D1	Note 2	Note2	White balance adj. (LCD)
D2	Note 2	Note2	White balance adj. (LCD)
D3	Note 2	Note2	Contrast adj. (LCD)
D4	Note 2	Note2	D range adj. (LCD)
D5	Note 2	Note2	V-COM level adj. (LCD)
D6	Note 2	Note2	VCO adj. (LCD)
D7	Note 2	Note2	V-COM adj. (LCD)
D8			Fixed data-1

Address	Initial Value		Remark
	NTSC	PAL	
D9	Note 2	Note2	Fixed data (NTSC model) Color adj. (LCD) (PAL model)
DA			Fixed data-1
DB			Fixed data-2
DC			Fixed data-1
DD			
DE			
DF			
E0			
E1			
E2			
E3			
E4			
E5			
E6			
E7			
E8			
E9			
EA			Fixed data-2
EB			
EC			Fixed data-1
ED			
EE			
EF			Fixed data-2
F0			Fixed data-1
F1			
F2			
F3			Fixed data-2
F4			Fixed data-1
F5			
F6			
F7			
F8			
F9			
FA			
FB			
FC to FF			

1-3. CAMERA SYSTEM ADJUSTMENTS

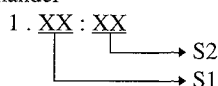
Before perform the camera system adjustments, Check that the specified value of “28MHz Origin Oscillation Adjustment”, “Y OUT level Adjustment” and “C OUT level Adjustment” of “VIDEO SYSTEM ADJUSTMENT” are satisfied.

1. G-CAM flip Adjustment

Set the color reproduction conditions to optimum

Subject	Color bar chart standard picture frame
Measurement Point	Display data of page 1 of the adjusting remote commander (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	21

Note 1. Displayed data of page 1 of the adjusting remote commander



Note 2. [] Except CCD-TRV15E/TRV15EP
<> CCD-TRV15E/TRV15EP

Adjusting method

- 1) Select page: 0, address: 01, and set data: 01
- 2) Select page: 0, address: 03, and set data: 16
- 3) Select page: F, address: 21, set data [D2] <D0>, and press the PAUSE button of the adjusting remote commander
- 4) Select page 1 of the adjusting remote commander, and compare the higher 2 digits (S1) and lower 2 digits (S2) of the 4-degits display data.
When $S1 < S2$
Perform steps 5) onwards
When $S1 \geq S2$
Perform steps “Processing after Completing Adjustments”.
- 5) Select page: F, address: 21, set data [52] <50>, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

- 1) Select page: 0, address: 03, and set data: 00.
- 2) Select page: 0, address: 01, and set data: 00

2. HALL Adjustment

For detecting the position of the lens iris, adjust the hall AMP gain and offset

Subject	Not required
Measurement Point	DDS display data of LCD or TV monitor (Note 3)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	2F, 30
Specified Value	90 to 94 during IRIS OPEN (Note 1) 19 to 1D during IRIS CLOSE (Note 2)

Note 1: Select page 2, address 01, set data 01, and press the PAUSE button of the adjusting remote commander

Note 2: Select page 2, address 01, set data 03, and press the PAUSE button of the adjusting remote commander.

Note 3: DDS display data of LCD or TV monitor

00 00XX
 → Object data

Adjusting method.

- 1) Select page 0, address 01, and set data 01
- 2) Select page 0, address 03, and set data 03
- 3) Select page D, address 11, set data: 02, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address 01, set data. 03, and press the PAUSE button
- 5) Select page F, address 30, set data 80, and press the PAUSE button.
- 6) Select page: F, address 2F, set data 40, and press the PAUSE button.
- 7) Read the DDS display data (the bottom two digits of the display data at the bottom right of the LCD display or the TV monitor), and this data is named K₂.
- 8) Select page: F, address 2F, set data: 30, and press the PAUSE button
- 9) Read the DDS display data, and this data is named K₁
- 10) Select page. 2, address 01, set data 01, and press the PAUSE button
- 11) Read the DDS display data, and this data is named W₁
- 12) Select page. F, address 2F, set data 40, and press the PAUSE button
- 13) Read the DDS display data, and this data is named W₂
- 14) Convert W₁, W₂, K₁, K₂, to decimal notation, and obtain W₁', W₂', K₁', K₂'. (Refer to Table 5-1-2 "Hexadecimal notation - decimal notation conversion table" of "Service mode")
- 15) Calculate X₁' using the following equations (decimal notation calculation).

$$A' = W_2' + K_1' - W_1' - K_2' \quad \text{Equation 1}$$

$$B' = W_1' - K_1' \quad \text{Equation 2}$$

$$X_1' = [1904 + (48 \times A') - (16 \times B')] / A' \quad \text{Equation 3}$$
- 16) Convert X₁' to hexadecimal notation, and obtain X₁
(Round off to one decimal place)
- 17) Select page F, address. 2F, set data X₁, and press the PAUSE button
- 18) Select page 2, address 01, and set data: 01, and press the PAUSE button
- 19) Select page F, address: 30, change the data and adjust the DDS display data to "92"
- 20) Press the PAUSE button of the adjusting remote commander
- 21) Select page: 2, address: 01, and set data 03, and press the PAUSE button

- 22) Read the DDS display data, and this data is named K₀. If K₀ lies within the "19" to "1D" range, perform "Processing after completing adjustments" If it is lies outside the range, perform the following adjustments

- 23) Convert K₀ to decimal notation, and obtain K₀'

- 24) Calculate X₂' using the following equations (decimal notation calculation)

$$C' = 146 - B' - K_0' \quad \text{Equation 4}$$

$$X_2' = [(119 - B') \times (X_1' - 48) + (48 \times C')] / C' \quad \text{Equation 5}$$

(X₁' and B' are values obtained from equations 2) and 3))

- 25) Convert X₂' to hexadecimal notation, and obtain X₂

(Round off to one decimal place)

- 26) Select page F, address 2F, set data X₂, and press the PAUSE button
- 27) Select page 2, address 01, set data 03, and press the PAUSE button
- 28) Select page F, address 30, change the data and adjust the DDS display data to "1B"
- 29) Press the PAUSE button of the adjusting remote commander
- 30) Select page 2, address 01, set data: 01, and press the PAUSE button
- 31) Check the DDS display data lies within the "90" to "94" range

Processing after Completing Adjustments

- 1) Select page D, address 11, and set data 00, and press the PAUSE button
- 2) Select page 0, address 01, and set data 00
- 3) Select page: 2, address 01, and set data 00, and press the PAUSE button
- 4) Select page 0, address 03, and set data 00

3. Flange Back Adjustment

The inner focus lens flange back adjustment is carried out automatically. In whichever case, the focus will be deviated during auto focusing/manual focusing.

3-1. Flange Back Adjustment(1)

Subject	Flange back adjustment chart (2.0 m from the front of the lens) (Luminance: 200 ± 50 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

- 1) NIGHT SHOT switch OFF

Adjusting method:

- 1) Check that at both the zoom lens TELE end and WIDE end, the center of the chart for the flange back adjustment and center of the exposure screen coincide.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Check that the data of page: F, address: 3E to 42, 76 to 7B is the initial value (See table below).

Address	Data	Address	Data
3E	25	77	54
3F	00	78	25
40	19	79	80
41	00	7A	10
42	35	7B	FF
76	1B		

- 4) Select page: 2, address: 02, and check that the data is "00".
- 5) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 2, address: 01, set data: 15, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
- 7) Select page: 2, address: 02, and check that the data is „01“.

Processing after Completing Adjustments

- 1) Turn OFF the main power supply (8.4V).
- 2) Perform "Flange Adjustment (2)".

3-2. Flange Back Adjustment (2)

Perform this adjustment after performing "Flange Back Adjustment (1)".

Subject	Subject more than 500m away (Subjects with clear contrast such as buildings, etc.)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

- 1) NIGHT SHOT switch OFF

Adjusting method:

- 1) Set the zoom lens to the TELE end and expose a subject that is more than 500 m away (subject with clear contrast such as building, etc.). (Nearby subjects less than 500 m away should not be in the screen.)
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: 2, address: 02, and check that the data is "00".
- 4) Select page: 2, address: 01, set data: 13, and press the PAUSE button of the adjusting remote commander.
- 5) Place a ND filter on the lens so that the optimum image is obtain.
- 6) Select page: 2, address: 01, set data: 29, and press the PAUSE button of the adjusting remote commander.
(The adjustment data will be automatically input to page: F, addresses: 3E to 42, 76 to 7B.)
- 8) Select page: 2, address: 02, and check that the data is "01".

Processing after Completing Adjustments

- 1) Select page: 0, address: 01, and set data: 00.
- 2) Turn OFF the main power supply (8.4V).
- 3) Perform "Flange Back Check".

4. Flange Back Check

Subject	Siemens star (2.0 m from the front of the lens) (Luminance: approx. 200 lux)
Measurement Point	Check operation on TV monitor
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3E to 42, 76 to 7B

Switch setting:

- 1) NIGHT SHOT switch OFF

Checking method:

- 1) Place the Siemens star 2.0m from the front of the lens.
- 2) To open the IRIS, decrease the luminous intensity to the Siemens star up to a point before noise appear on the image.
- 3) Select page: 2, address: 40, and set data: 02.
- 4) Select page: 2, address: 41, and set data: 01.
- 5) Shoot the Siemens star with the zoom TELE end.
- 6) Turn on the auto focus.
- 7) Check that the lens is focused (Note1).
- 8) Select page: 2, address: 21, and set data: 10.
- 9) Shoot the Siemens star with the zoom WIDE end.
- 10) Observe the TV monitor and check that the lens is focused.

Note 1: When the auto focus is ON, the lens can be checked if it is focused or not by observing the data on the page 1 of the adjusting remote commander.

- 1) Select page: 0, address: 03, and set data: 0F.
- 2) Page 1 shows the state of the focus.

1 : 00 : XX

Odd: Focused
Even: Unfocused

Processing after Completing Adjustments

- 1) Select page: 2, address: 21, and set data: 00.
- 2) Select page: 0, address: 03, and set data: 00.
- 3) Select page: 2, address: 40, and set data: 00.
- 4) Select page: 2, address: 41, and set data: 00.

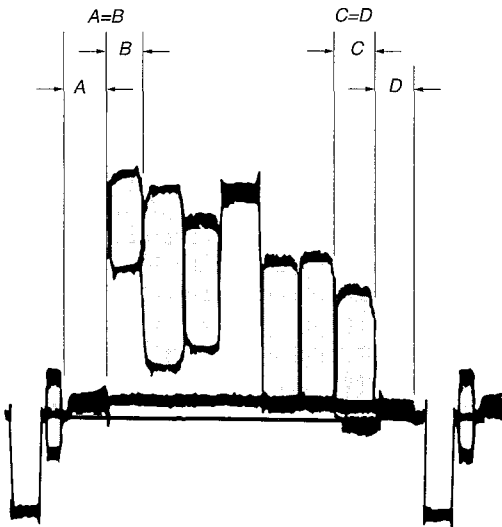
5. Picture Frame Setting

Subject	Color bar chart standard picture frame (1.5m from the front of the lens)
Measurement Point	Video output terminal
Measuring Instrument	Oscilloscope and TV monitor
Specified Value	A=B, C=D, t=0 ± 0.1msec

Setting method:

- 1) Adjust the zoom and the camera direction, and set to the specified position.
- 2) Mark the position of the picture frame on the monitor display, and adjust the picture frame to this position in following adjustments using "Color bar chart standard picture frame".

1. Horizontal period



2. Vertical period

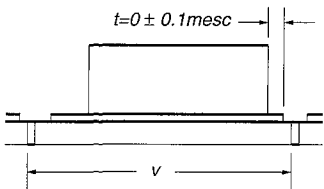


Fig. 5-1-8.

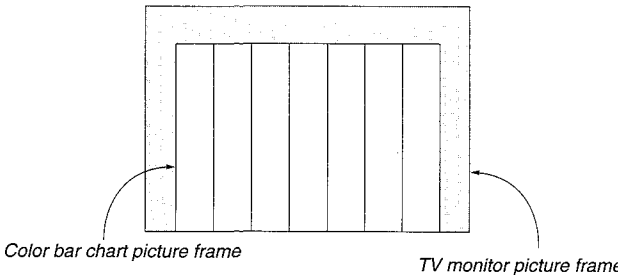


Fig. 5-1-9.

6. Color Reproduction Adjustment

Adjust the color Separation matrix coefficient so that proper color reproduction is produced.

Subject	Color bar chart standard picture frame
Measurement Point	Video output terminal
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	34, 36, F5, F6

Specified Value

All color luminance points should settle within each color reproduction frame.

Note1: NTSC 510H model (CCD-TRV15/ TRV15PK)

NTSC 760H model (CCD-TRV25/ TRV25PK/ TRV35/
TRV65/ TRV65PK/ TRV85/ TRV93/ TRV215/
TRV615/ TRV815)

PAL 510H model (CCD-TRV15E/ TRV15EP)

PAL 760H model (CCD-TRV35E)

Switch setting:

1) NIGHT SHOT switch OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, set data: 3D, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: F, address: 25, set data: 3F, and press the PAUSE button of the adjusting remote commander.
- 4) Adjust the GAIN and PHASE of the vectorscope, and adjust the burst luminance point to the burst position of the color reproduction frame.
- 5) Change the data of page: F, address: 34, 36, F5 and F6, and settle each color luminance point in each color reproduction frame.

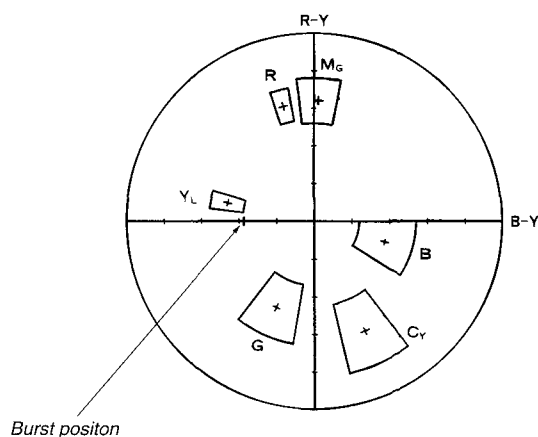
Note 2: Be sure to press the PAUSE button of the adjusting remote commander before changing the of addresses. If not, the new data will not be written to the memory.

6) Press the PAUSE button of the adjusting remote commander.

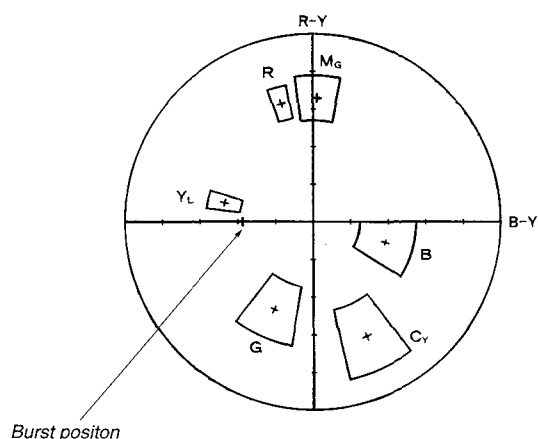
Processing after Completing Adjustments

- 1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 0, address: 01, and set data: 00.

For NTSC 510H model



For NTSC 760H model



For PAL 510H/PAL 760H model

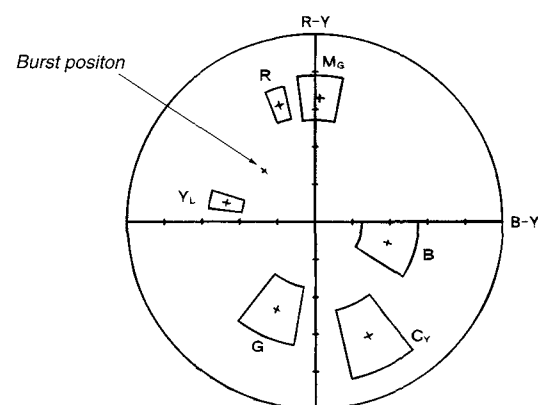


Fig. 5-1-10.

7. IRIS IN/OUT Adjustment

For the unit to judge if the white balance is indoors or outdoors in auto white balance operations, measure the light level and write it in the EEPROM.

If the level is not correct, the white balance will not be accurate.

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	3C, 3D

Note 1: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the LIGHT LEVEL data.

00 XX XX
 ↳ Lower two digits
 ↳ Upper two digits

Switch setting:

- 1) STEADY SHOT (Menu display) OFF
- 2) NIGHT SHOT switch OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 0, address: 03, and set data: 06.
- 3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 40, and set data: 02.
- 5) Select page: 2, address: 01, set data: 0B, and press the PAUSE button of the adjusting remote commander.
- 6) Read the DDS display data (Note 1), and take the upper two digits as D₁ and the lower two as D₂.
- 7) Convert D₁ to decimal notation, and obtain D₁'. (Refer to Table 5-1-2. "Hexadecimal notation - decimal notation conversion table" of "Service mode".)
- 8) Calculate D₃' using the following equations. (Equations 1 and 2 are for decimal notation calculation).
 When D₂ ≥ D₀

$$D_3' = D_1' - 21 \text{ Equation 1}$$

 When D₂ < D₀

$$D_3' = D_1' - 22 \text{ Equation 2}$$
- 9) Convert D₃' to hexadecimal notation, and obtain D₃.
- 10) Select page: F, address: 3C, set data: D₃, and press the PAUSE button of the adjusting remote commander.
- 11) Select page: 2, address: 01, set data: 09, and press the PAUSE button of the adjusting remote commander.
- 12) Read the DDS display data (Note 1), and take the upper two digits as D₄ and the lower two as D₅.
- 13) Convert D₄ to decimal notation, and obtain D₄'. (Refer to Table 5-1-2. "Hexadecimal notation - decimal notation conversion table" of "Service mode".)
- 14) Calculate D₆' using the following equations. (Equations 3 and 4 are for decimal notation calculation).
 When D₅ ≥ F₀

$$D_6' = D_4' - 13 \text{ Equation 3}$$

 When D₅ < F₀

$$D_6' = D_4' - 14 \text{ Equation 4}$$
- 15) Convert D₆' to hexadecimal notation, and obtain D₆.
- 16) Select page: F, address: 3D, set data: D₆, and press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

- 1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 40, and set data: 00.
- 5) Select page: 0, address: 03, and set data: 00.

8. MAX GAIN Adjustment

Setting the minimum illumination.

If it is not consistent, the image level required for taking subjects in low illuminance will not be produced (dark).

Subject	Clear chart (Color bar standard picture frame)
Measurement Point	DDS display of LCD or TV monitor
Measuring Instrument	(Note 1)
Adjustment Page	F
Adjustment Address	31
Specified Value	C0 to FF

Note 1: The right two digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 00 XX
 ↳ Object data

Note 2: NTSC 510H model (CCD-TRV15/TRV15PK)
 NTSC 760H model (CCD-TRV25/TRV25PK/TRV35/
 TRV65/TRV65PK/TRV85/TRV93/
 TRV215/TRV615/TRV815)
 PAL 510H model (CCD-TRV15E/15EP)
 PAL 760H model (CCD-TRV35E)

Switch setting:

- 1) STEADY SHOT (Menu display) OFF
- 2) NIGHT SHOT switch OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
- 3) Select of page: 0, address: 03, and set data: 01.
- 4) Select page: 2, address: 40, and set data: 02.
- 5) Select page: 2, address: 56, and set data: 40.
- 6) Select page: 2, address: 01, set data: 19, and press the PAUSE button of the adjusting remote commander.
- 7) Select page: F, address: 31, set data: [18] <08>, and press the PAUSE button of the adjusting remote commander.
 Note : [] : 510H model
 < > : 760H model
- 8) Check that the DDS display data (Note 1) lies within the specified value.

Processing after Completing Adjustments

- 1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 40, and set data: 00.
- 5) Select page: 2, address: 56, and set data: 00.
- 6) Select page: 0, address: 03, and set data: 00.

9. Auto White Balance Standard Data Input

Subject	Clear chart (Color bar standard picture frame)
Adjustment Page	F
Adjustment Address	70 to 73

Note 1: Perform “Color Reproduction Adjustment” before this adjustment.

Note 2: Check that the data of page: 2, address: 02 is 00. If not, turn the power of the unit OFF/ON.

Switch setting:

1) NIGHT SHOT switch OFF

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Wait for 2 seconds.
- 3) Select page: 2, address: 01, and set data: 11, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 01, and set data: 0D, and press the PAUSE button of the adjusting remote commander.
(When the standard data is take in, the data will be automatically input to page: F, address: 70 to 73.)
- 5) Select page: 2, address: 02, and check that the data is “01”.
- 6) Perform “Auto White Balance Adjustment”.

Processing after Completing Adjustments

- 1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 0, address: 01, and set data: 00.

10. White Balance Adjustment

Adjust to the proper auto white balance output data.

If it is not correct, auto white balance and color reproducibility will be poor.

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction
Measurement Point	DDS display of LCD or TV monitor (Note 1)
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3A, 3B
Specified Value	R ratio: 2B40 to 2BC0 B ratio: 5E40 to 5EC0

Note 1: Perform “Auto White Balance Standard Data Input” before this adjustment.

Note 2: The right four digits of the display data at the right bottom side of the LCD and TV monitor is the object data.

00 XXXX

→ Object data

Switch setting:

1) NIGHT SHOT switch OFF

Adjusting method:

- 1) Place the C14 filter for color temperature correction on the lens.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: D, address: 11, and set data: 02, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 01, and set data: 3F, and press the PAUSE button of the adjusting remote commander.
- 5) Select page: 0, address: 03, and set data: 04.
- 6) Select page: F, address: 3A, and change the data, and adjust the average value of the DDS display data(Note 2) to the R ratio specified value.
- 7) Press the PAUSE button of the adjusting remote commander.
- 8) Select page: 0, address: 03, and set data: 05.
- 9) Select page: F, address: 3B, and change the data, and adjust the average value of the DDS display data(Note 2) to the B ratio specified value.
- 10) Press the PAUSE button of the adjusting remote commander.

Processing after Completing Adjustments

- 1) Select page: D, address: 11, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 0, address: 01, and set data: 00.
- 3) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 0, address: 03, and set data: 00.

11. White Balance Check

Subject	Clear chart (Color bar standard picture frame)
Filter	Filter C14 for color temperature correction ND filter 1.0 and 0.3
Measurement Point	video output terminal
Measuring Instrument	Vectorscope
Specified Value	Fig. 5-1-11. A to C

Switch setting:

- 1) NIGHT SHOT switch OFF

Checking method:

- 1) Check that the lens is not covered with either filter.
- 2) Select page: 2, address: 01, set data: 0F, and press the PAUSE button of the adjusting remote commander.
- 3) Check that the center of the white luminance point is within the circle shown Fig. 5-1-11.A.
- 4) Select page: 2, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 5) Select page: 2, address: 01, set data: 23, and press the PAUSE button of the adjusting remote commander.
- 6) Place the C14 filter on the lens.
- 7) Check that the center of the white luminance point settles in the circle shown Fig. 5-1-11.B.
- 8) Remove the C14 filter, and place the ND filter 1.3 (1.0 +0.3) on the lens.
- 9) Check that the white luminance point stopped moving, and then remove the ND filter 1.3.
- 10) Check that the center of the white luminance point settles within the circle shown Fig. 5-1-11.C.

Processing after Completing Adjustments

- 1) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjusting remote commander.

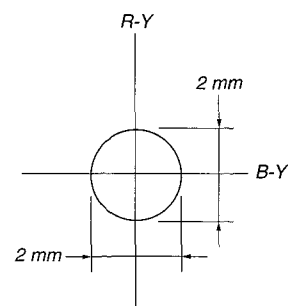


Fig.5-1-11. A

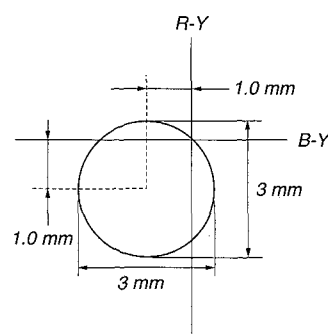


Fig.5-1-11. B

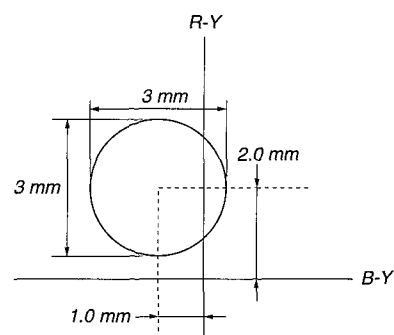


Fig.5-1-11. C

12. Angular Velocity Sensor Sensitivity Adjustment

- This adjustment is performed only when replacing the angular velocity sensor
Although this adjustment need not be performed when the circuit is damaged, etc., check the operations
- Note down the sensitivity displayed on the angular velocity sensor of the repair parts. At this time, note down also to which board it was attached to
Be sure to check because if attached incorrectly, the screen will vibrate up and down or left and right during hand-shake correction operations.

Precautions on the Parts Replacement

There are two types of repair parts

Type A ENC03EA or ENC 03JA

Type B . ENC03EB or ENC 03JB

Replace the broken sensor with a same type sensor. If replace with other parts, the image will vibrate up and down or left and right during hand-shake correction operations. After replacing, re-adjust according to the adjusting method after replacement

Precautions on Angular Velocity Sensor

The sensor incorporates a precision oscillator. Handle it with care as if it dropped, the balance of the oscillator will be disrupted and operations will not be performed properly

Adjustment page	F
Adjustment Address	43, 44

Note: The sensor sensitivity of SE451 and SE452 of the SE-66/67 board is written only on the repair parts

Adjusting method

- 1) Select page: 0, address 01, and set data 01.
- 2) Read the sensor sensitivity written on SE451 of the SE-66/67 board, and take this as S_{451} .
- 3) Read the sensor sensitivity written on SE452 of the SE-66/67 board, and take this as S_{452} .
- 4) Calculate D_{43}' and D_{44}' using the following equation (decimal calculation)
NTSC model (CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV215/TRV35/ TRV65/ TRV65PK/ TRV85/ TRV93/ TRV615/ TRV815)
$$D_{43}' = 85 / S_{451}$$
$$D_{44}' = 90 / S_{452}$$

PAL model (CCD-TRV15E/ TRV15EP/TRV35E)
$$D_{43}' = 118 / S_{451}$$
$$D_{44}' = 106 / S_{452}$$
- 5) Convert D_{43}' and D_{44}' into hexadecimal digits, to obtain D_{43} and D_{44} (Round off decimal points)
- 6) Select page: F, address: 43, set data: D_{43} , and press the PAUSE button of the adjusting remote commander
- 7) Select page: F, address: 44, set data: D_{44} , and press the PAUSE button of the adjusting remote commander

Processing after Completing Adjustments

- 1) Select page. 0, address 01, and set data 00.
- 2) Check that the steady shot operations have been performed normally.

1-4. COLOR ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENT

(CCD-TRV93)

Note 1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note 2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

[Adjusting connector]

Most of the measuring points for adjusting the viewfinder system are concentrated in CN910 of the VC-195 board.

Connect the measuring instruments via the CPC-7 jig (J-6082-382-A).

The following table shows the Pin No. and signal name of CN910.

Pin No.	Signal Name	Pin No.	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

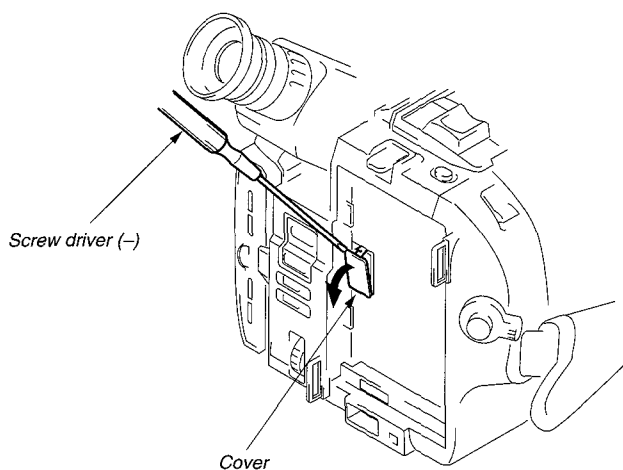


Fig.5-1-12.

1. EVF Initial Data Input

Mode	VTR stop
Signal	No signal
Adjustment Page	E
Adjusting Address	C2 to CD

Adjusting method:

1) Select page: 0, address: 01, and set data: 01.

2) Select page: E, and input the data in the following table.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page: 0, address: 01, and set data: 00.

Address	Data	Remark
C2	B0	VCO adjustment
C3	80	Bright adjustment
C4	77	Contrast adjustment
C5	80	White balance adjustment
C6	80	White balance adjustment
C7	68	Fixed value
C8	50	Fixed value
C9	F8	Fixed value
CA	A8	Fixed value
CB	3C	Fixed value
CC	B0	Backlight Consumption Current Adjustment
CD	70	Fixed value

2. VCO Adjustment (VF-119 board)

Set the VCO free-run frequency. If deviated, the EVF screen will be blurred.

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑮ of CN910 (VCO) on VC-195 board
Measuring instrument	Oscilloscope (DC range)
Adjustment page	E
Adjustment address	C2
Specified value	$A = 1.8 \pm 0.1 \text{ Vdc}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
- 3) Check the GND level of the oscilloscope.
- 5) Select page: E, address: C2, change the data and set the VCO output voltage (A) to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

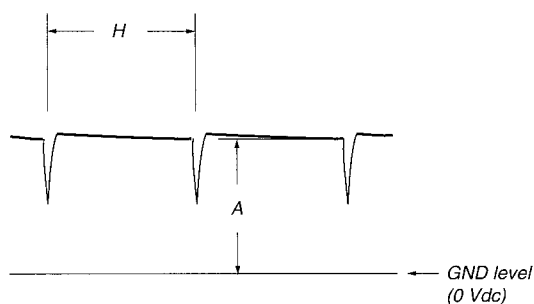


Fig. 5-1-13.

3. Bright Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ⑯ of CN910 (EVF VG) on VC-195 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	C3
Specified value	$A = 7.2 \pm 0.1 \text{ V}$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: E, address: C3, change the data and set the voltage (A) between the reversed waveform pedestal and non-reversed waveform pedestal to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

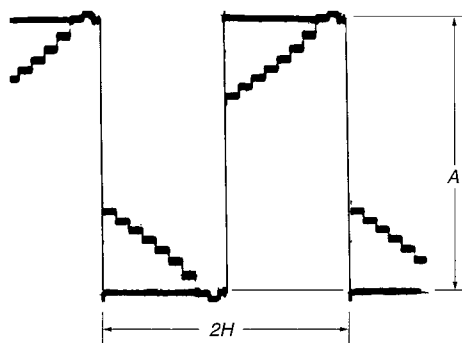


Fig. 5-1-14.

4. Contrast Adjustment (VF-119 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑮ of CN910 (EVF VG) on VC-195 board
Measuring Instrument	Oscilloscope
Adjustment Page	E
Adjustment Address	C4
Specified Value	A = $2.1 \pm 0.1\text{V}$ (NTSC) A = $2.0 \pm 0.1\text{V}$ (PAL)

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: E, address: C4, change the data and set the voltage (A) between the 7 step peak and the pedestal to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

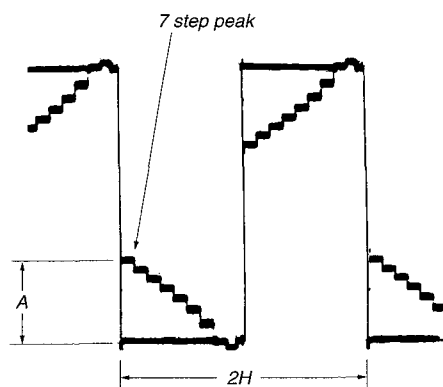


Fig. 5-1-15.

5. Backlight Consumption Current Adjustment (VF-120 board)

Set the backlight luminance and color temperature. If deviated, the image may become dark or bright.

Mode	VTR stop
Signal	No signal
Measurement Point	+ Probe: Pin ⑭ of CN910 (EVF BL 4.75V) on VC-195 board - Probe: Pin ⑬ of CN910 (EVF BL) on VC-195 board
Measuring Instrument	Digital voltmeter
Adjustment Page	E
Adjustment Address	CC
Specified Value	A = $21.0 \pm 1.0\text{ mVdc}$

Note: Adjust 30 seconds after running on the power supply.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 55, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: E, address: CC, change the data and set the voltage difference (A) between Pin ⑭ of CN910 (EVF BL 4.75V) and Pin ⑬ of CN910 (EVF BL) to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

6. White Balance Adjustment (VF-119 board)

Correct the white balance.

If deviated, the reproduction of the EVF screen may degenerate.

Mode	VTR stop
Signal	No signal
Measurement Point	Check on EVF screen
Measuring Instrument	
Adjustment Page	E
Adjustment Address	C5, C6
Specified Value	The EVF screen should not be colored.

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
- 2) Select page: 2, address: 7D, and set data: 03.
- 3) Select page: E, address: C5 and C6, set the data to the initial value.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	C5	C6
Data	80	80

- 4) Check that the LCD screen is not colored. If colored, change the data of page: E, address: C5 and C6 so that the EVF screen is not colored.

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

- 5) Select page: 2, address: 7D, and set data: 00.
- 6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 7) Select page: 0, address: 01, and set data: 00.

1-5. MONOCHROME ELECTRONIC VIEWFINDER SYSTEM ADJUSTMENTS

(CCD-TRV15/ TRV15PK/ TRV15E/ TRV15EP/ TRV25/ TRV25PK/ TRV35/ TRV35E/ TRV65/ TRV65PK/ TRV85/ TRV215/ TRV615/ TRV815)

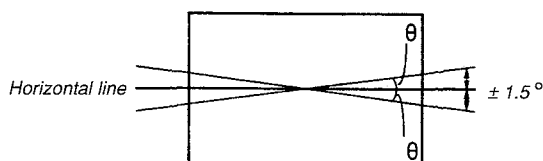
Note: NTSC model: CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV35/ TRV65/ TRV65PK/ TRV85/ TRV93/ TRV215/ TRV615/ TRV815
PAL model : CCD-TRV15E/ TRV15EP/ TRV35E

1-5-1. Horizontal Slant Check

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	$\pm 1.5^\circ$

Adjusting method:

- 1) Adjust RV904 (BRIGHT) (VF-99 board) so that the CRT can be seen easily and clearly.
- 2) Check that the difference between the horizontal line and the tilt of the black mask satisfies the specified value.



Specified value : The image should be within $\pm 1.5^\circ$ of the horizontal line.

Fig. 5-1-16.

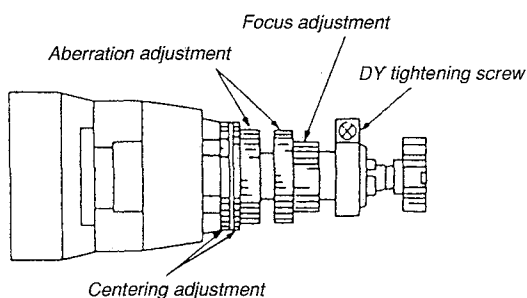


Fig. 5-1-17.

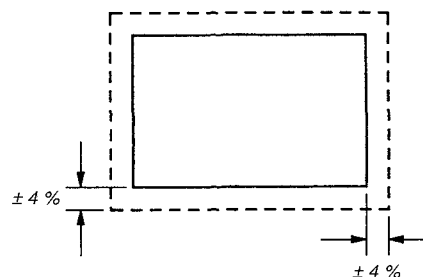
1-5-2. Centering Adjustment

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	$\pm 4\%$

Adjusting method:

- 1) Use the centering adjustment ring and adjust so that the left, right, top, and bottom sides of the display are uniform. (Refer to Fig. 5-1-17.)

Note : As the centering position changes due to earth magnetism, rotate it 360° in the horizontal direction, and adjust with the center section of the modifying position.



Adjustment value : $\pm 4\%$

Fig. 5-1-18.

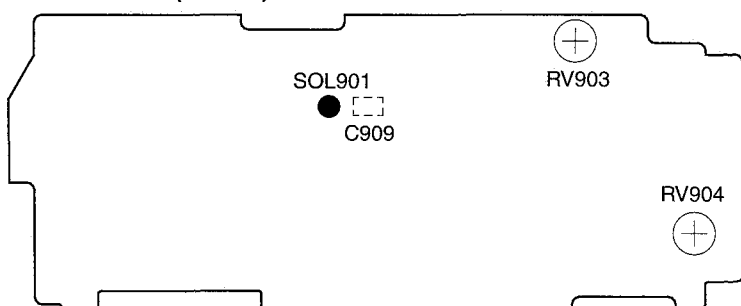
1-5-3. Focus Adjustment

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section

Adjusting method:

- 1) Adjust the focus ring to obtain the optimum focus. (Refer to Fig. 5-1-17.)

VF-99 BOARD (SIDE A)



1-5-4. Aberration Adjustment

Mode	VTR stop
Signal	Dot pattern
Specified Value	$b1 \leq 2 \cdot a1$ $b2 \leq 0.8 \cdot a2$

Adjusting method:

- 1) Adjust the aberration adjustment ring so that the tracing of the dot satisfies the specified value.
- 2) If the centering becomes displaced here, perform the centering adjustment from the beginning again

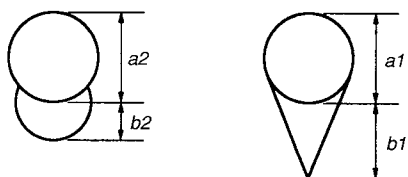


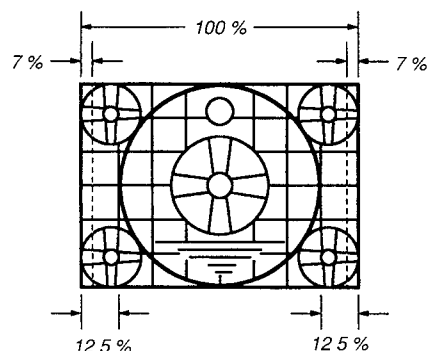
Fig. 5-1-19.

1-5-5. Horizontal Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	C909 (SOL901)
Specified Value	$\pm 1.5^\circ$

Adjusting method.

- 1) Rotate RV903, and adjust the top and bottom sides of the monoscope image to the top and bottom edges of the display
- 2) Rotate RV904 so that the brightness is the normal level.
- 3) Solder or unsolder SOL901 pattern of the H size adjustment capacitor (C909) to "short" or "open", so that the horizontal direction over scan becomes $14 \pm 6\%$ (Left and right totals)



SOL901	Size H
Open	Small
Short	Big

VF-99 BOARD (SIDE A)

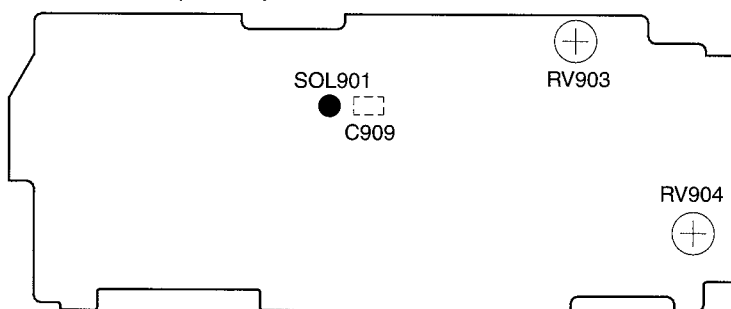


Fig. 5-1-20.

1-5-6. Vertical Amplitude Adjustment (VF-99 board)

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Adjusting Element	RV903
Specified Value	$10 \pm 3\%$

Adjusting method:

- 1) Adjust RV903 so that the vertical direction over scan becomes $10 \pm 3\%$ (Top and bottom totals)

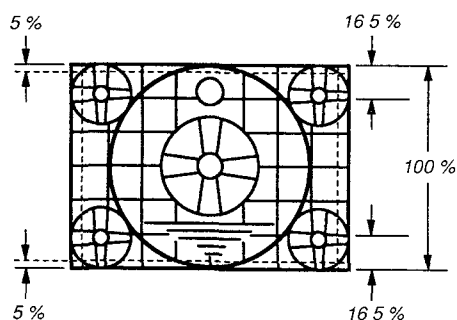


Fig. 5-1-21.

1-5-7. Brightness Adjustments (VF-99 board)

Mode	Playback
Signal	Alignment tape For checking operations (WR5-5NSP (NTSC)) (WR5-5CSP (PAL)) Monoscope section
Specified Value	RV904

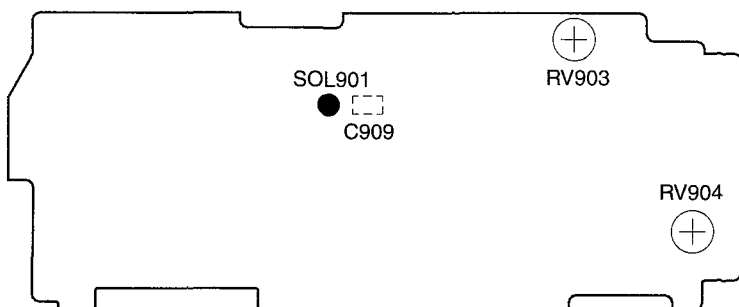
Adjusting method

- 1) Rotate RV904, and adjust so that the bright/dark sections of the gray scale are displayed correctly (The bright section should be unsatisfactory till the cross hatch appears vague in the monoscope circle. The dark section should be unsatisfactory till the darkest section and the second darkest section of the gray scale cannot be differentiated.)

1-5-8. Horizontal Amplitude, Vertical Amplitude, Focus Check

“1-5-5 Horizontal Amplitude Adjustment” and “1-5-6. Vertical Amplitude Adjustment” should both satisfy the specified values. If not, perform the adjustments from the beginning again. In this case, perform “1-5-7 Brightness, Contrast Adjustments” again. Moreover, check the focus, and if it found to be vague, perform “1-5-3 Focus Adjustment” and “1-5-4 Aberration Adjustment”.

VF-99 BOARD (SIDE A)



1-6. LCD SYSTEM ADJUSTMENT

Note1: The back light (fluorescent tube) is driven by a high voltage AC power supply. Therefore, do not touch the back light holder to avoid electrical shock.

Note2: When replacing the LCD unit, be careful to prevent damages caused by static electricity.

Note3: Set the brightness to the center using the LCD BRIGHT button.

Note4: 2.5" LCD model:

PD-92board, Ref No 5000 series

3"/3.5" LCD model

PD-93board, Ref No 4000 series

Note5: 2.5" LCD model ·

CCD-TRV15/ TRV15E/ TRV15EP/ TRV15PK/

TRV25/ TRV25PK/ TRV35/ TRV35E/ TRV65/

TRV65PK/ TRV215/ TRV615

3" LCD model · CCD-TRV93

3.5" LCD model CCD-TRV85/ TRV815

[Adjusting connector]

Most of the measuring points for adjusting the LCD display are concentrated in the following connector.

CN5501 of the PD-92 board (2.5" LCD model)

CN4501 of the PD-93 board (3"/3.5" LCD model)

Connect the measuring instruments via the multi CPC jig (J-6082-311-A).

The following table shows the Pin No. and signal name of the connector.

Pin No.	Signal name	Pin No.	Signal name
1	VB	2	VCO VOLTAGE
3	VG	4	PANEL COM
5	VR	6	N C
7	SYNC / HD	8	H START
9	GND	10	GND

[LCD type check]

By measuring the resistor value between Pin ⑥ of CN5501/4501 and Pin ⑩ of CN5501/4501, the type of LCD can be discriminated.

PD-92board CN5501

Resistor value	LCD type	Model
5.6kΩ	2.5" TYPE S NTSC	CCD-TRV35/ TRV65 TRV65PK/ TRV615
8.2kΩ	2.5" TYPE S PAL	CCD-TRV35E
1.5kΩ	2.5" TYPE C NTSC	CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV215
3.9kΩ	2.5" TYPE C PAL	CCD-TRV15E/ TRV15EP

PD-93board CN4501

Resistor value	LCD type	Model
4.7kΩ	3"/3.5" TYPE S NTSC	CCD-TRV93
1.0kΩ	3"/3.5" TYPE C NTSC	CCD-TRV85/ TRV815

1. LCD Initial Data Input

Mode	VTR stop
Signal	Arbitrary
Adjustment Page	E
Adjustment Address	A5 to A7, B0 to B9, BF, C0, C1, CF, D0 to DD

Adjusting method:

1) Select page 0, address 01, and set data 01

2) Select page D, and input the data in the following table

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

3) Select page 0, address 01, and set data 00

Address	Data	Remark
A5	53	Fixed value
A6	96	Fixed value
A7	68	Fixed value
B0	3F	Fixed value
B1	C8	Fixed value
B2	1F	Fixed value
B3	1F	Fixed value
B4	00	Fixed value
B5	00	Fixed value
B6	Note1	Fixed value
B7	4E	Fixed value
B8	08	Fixed value
B9	00	Fixed value
BF	80	[VCO adjustment] <Fixed value>
C0	Note2	Fixed value
C1	Note3	Fixed value
CF	69/84	Bright adjustment (Note 5)
D0	7A/77	Color adjustment (Note 5)
D1	AA/98	White balance adjustment (Note 5)
D2	9C/7B	White balance adjustment (Note 5)
D3	B1/DC	Contrast adjustment (Note 5)
D4	B1/80	D range adjustment (Note 5)
D5	94/89	V-COM level adjustment (Note 5)
D6	80	VCO adjustment
D7	80	V-COM level adjustment
D8	80	Fixed value
D9	Note4	[Color adjustment] <Fixed value>
DA	80	Fixed value
DB	52	Fixed value
DC	99	Fixed value
DD	99	Fixed value

< > NTSC model only

[] PAL model only

Note1: B0 NTSC model

F0 PAL model

Note2: A4 2.5" LCD model

8B 3" LCD model

8D 3.5" LCD model

Note3: D8 2.5" LCD TYPE S model

CF 2.5" LCD TYPE C model

B8 3" LCD model

A9 3.5" LCD model

Note4: 00 NTSC model

7A LCD TYPE S PAL model

77 LCD TYPE C PAL model

Note5: LCD TYPE S/LCD TYPE C

4. Bright Adjustment (PD-92/93 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish)

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501/4501 (VG) of PD-92/93 board External trigger Pin ④ of CN5501/ CN4501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	CF
Specified value	A = $1.94 \pm 0.05V$ (LCD TYPE S model) A = $1.34 \pm 0.05V$ (LCD TYPE C model)

Note1 : LCD TYPE S model CCD-TRV35/ TRV35E/ TRV65/ TRV65PK/ TRV93/ TRV615
LCD TYPE C model CCD-TRV15/ TRV15PK/ TRV15E/ TRV15EP/ TRV25/ TRV25PK/ TRV85/ TRV215/ TRV815

Adjusting method

- 1) Select page: 0, address 01, and set data 01
- 2) Select page: 3, address 01, set data 55, and press the PAUSE button of the adjusting remote commander
- 3) Select page 2, address 7D, and set data 40
- 4) Select page E, address CF, change the data and set the voltage (A) between the pedestal and white to the specified value (The data of address CF should be "41" to "BF".)
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander
- 7) Select page 2, address: 7D, and set data. 00
- 8) Select page. 0, address 01, and set data 00.

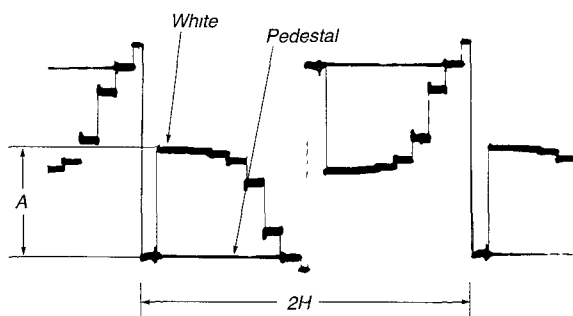


Fig. 5-1-24.

5. Contrast Adjustment (PD-92/93 board)

Set the level of the VIDEO signal for driving the LCD to the specified value. If deviated, the screen image will be blackish or saturated (whitish).

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501/4501 (VG) of PD-92/93 board External trigger Pin ④ of CN5501/ CN4501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D3
Specified value	A = $3.52 \pm 0.07V$ (LCD TYPE S model) A = $2.54 \pm 0.07V$ (LCD TYPE C model)

Note1 : LCD TYPE S model . CCD-TRV35/ TRV35E/ TRV65/ TRV65PK/ TRV93/ TRV615
LCD TYPE C model . CCD-TRV15/ TRV15PK/ TRV15E/ TRV15EP/ TRV25/ TRV25PK/ TRV85/ TRV215/ TRV815

Adjusting method

- 1) Select page 0, address 01, and set data: 01
- 2) Select page 3, address 01, set data: 55, and press the PAUSE button of the adjusting remote commander
- 3) Select page 2, address 7D, and set data 00
- 4) Select page E, address D3, change the data and set the voltage (A) between the pedestal (0 IRE) and 100 IRE to the specified value
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page: 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander.
- 7) Select page. 0, address 01, and set data 00

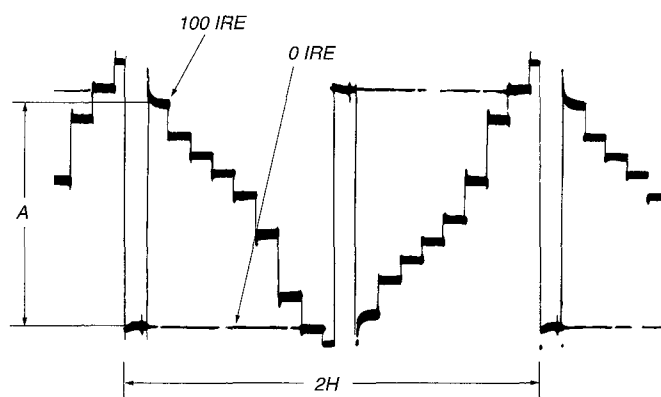


Fig. 5-1-25.

6. V-COM Level Adjustment (PD-92/93 board)

Set the common electrode drive signal level of LCD to the specified value

Mode	VTR stop
Signal	No signal
Measurement point	Pin ④ of CN5501/CN4501 (PANEL COM) of PD-92/93 board
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D5
Specified value	A = 6.50 ± 0.05 V (LCD TYPE S NTSC model) A = 6.43 ± 0.05 V (LCD TYPE S PAL model) A = 5.10 ± 0.05 V (LCD TYPE C model)

Note1 : Perform “Bright Adjustment” and “Contrast Adjustment” before this adjustment

Note2 : LCD TYPE S model · CCD-TRV35/ TRV35E/ TRV65/ TRV65PK/ TRV93/ TRV615
LCD TYPE C model · CCD-TRV15/ TRV15PK/ TRV15E/ TRV15EP/ TRV25/ TRV25PK/ TRV85/ TRV215/ TRV815

Adjusting method.

- 1) Select page 0, address 01, and set data 01.
- 2) Select page 3, address: 01, set data 55, and press the PAUSE button of the adjusting remote commander
- 3) Select page 2, address 7D, and set data 00
- 4) Select page: E, address: D5, change the data and set the PANEL COM signal level (A) to the specified value
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page 3, address: 01, set data 00, and press the PAUSE button of the adjusting remote commander.
- 7) Select page 0, address 01, and set data 00.

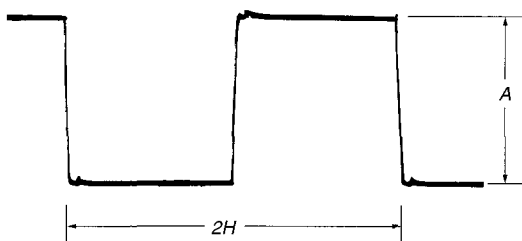


Fig. 5-1-26.

7. Color Adjustment (PD-92/93 board)

Set the color saturation to the standard value. If deviated, the color will be to dark or light

Mode	VTR stop
Signal	No signal
Measurement point	Pin ③ of CN5501/4501 (VG) of PD-92/93 board External trigger Pin ④ of CN5501/ CN4501 (PANEL COM)
Measuring instrument	Oscilloscope
Adjustment page	E
Adjustment address	D0 (NTSC) D0, D9 (PAL)
Specified value	2.5" LCD TYPE S model A = 0.05 ± 0.05 V (NTSC) A = 0.13 ± 0.05 V (PAL) 2.5" LCD TYPE C model A = 0.00 ± 0.05 V (NTSC) A = 0.05 ± 0.05 V (PAL) 3" LCD TYPE S model · A = 0.05 ± 0.05 V (NTSC) 3.5" LCD TYPE C model : A = 0.07 ± 0.05 V (NTSC)

Note1: 2.5" LCD TYPE S NTSC model

CCD-TRV35/ TRV65/ TRV65PK/ TRV615

2.5" LCD TYPE S PAL model · CCD-TRV35E

2.5" LCD TYPE C NTSC model

CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV215

2.5" LCD TYPE C PAL model · CCD-TRV15E/ TRV15EP

3" LCD TYPE S model : CCD-TRV93

3.5" LCD TYPE C model · CCD-TRV85/ TRV815

Adjusting method.

- 1) Select page 0, address 01, and set data 01
- 2) Select page 3, address 01, set data 57, and press the PAUSE button of the adjusting remote commander
- 3) Select page 2, address 7D, and set data 20
- 4) Select page: E, address D0, change the data and set the voltage (A) between the green and white to the specified value
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Only for PAL model, select page E, address D9, and set the same data as page E, address D0, and press the PAUSE button of the adjusting remote commander
- 7) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 8) Select page 2, address 7D, and set data 00
- 9) Select page 0, address 01, and set data 00

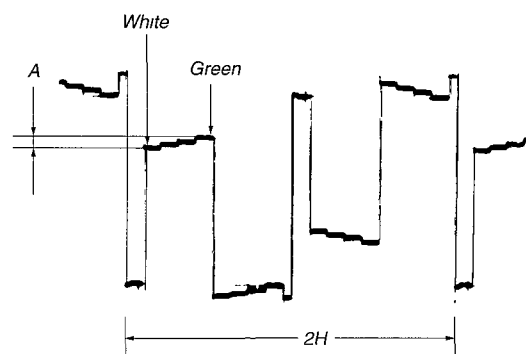


Fig. 5-1-27.

8. V-COM Adjustment (PD-92/93 board)

Set the DC bias of the common electrode drive signal of LCD to the specified value.

If deviated, the LCD display will move, producing flicker and conspicuous vertical lines

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D7
Specified value	The brightness difference between the section (A) and section (B) is minimum.

Note1 : Perform "Bright Adjustment" and "Contrast Adjustment" before this adjustment.

Adjusting method

- 1) Select page 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: 2, address: 7D, and set data: 87
- 4) Select page E, address D7, change the data so that the brightness of the section A and that of the section B is equal.
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander
- 7) Select page 2, address: 7D, and set data: 00.
- 8) Select page 0, address 01, and set data: 00

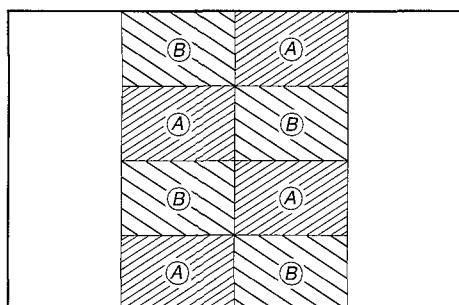


Fig. 5-1-28.

9. White Balance Adjustment (PD-92/93 board)

Correct the white balance

If deviated, the LCD screen color cannot be reproduced

Mode	VTR stop
Signal	No signal
Measurement point	Check on LCD display
Measuring instrument	
Adjustment page	E
Adjustment address	D1, D2
Specified value	The LCD screen should not be colored

Note1: Check the white balance only when replacing the following parts. If necessary, adjust them

- 1 LCD panel
- 2 Light induction plate
- 3 IC5502/4502

Note2 : LCD TYPE S model CCD-TRV35/ TRV35E/ TRV65/ TRV65PK/ TRV93/ TRV615

LCD TYPE C model CCD-TRV15/ TRV15E/ TRV15EP/ TRV15PK/ TRV25/ TRV25PK/ TRV85/ TRV215/ TRV815

Adjusting method:

- 1) Select page 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 51, and press the PAUSE button of the adjusting remote commander
- 3) Select page 2, address: 7D, and set data: 03
- 4) Select page. E, address: D1 and D2, and set the data to the initial value

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

Address	Data			
	LCD TYPE S		LCD TYPE C	
	NTSC	PAL	NTSC	PAL
D1	98	94	99	97
D2	88	81	89	8D

- 5) Check that the LCD screen is not colored. If colored, change the data of page: E, address: D1 and D2 so that the LCD screen is not colored

Note: To write in the non-volatile memory (EEPROM), press the PAUSE button of the adjusting remote commander each time to set the data.

- 6) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander
- 7) Select page 2, address: 7D, and set data: 00.
- 8) Select page. 0, address: 01, and set data: 00

5-2. MECHANICAL SECTION ADJUSTMENT

Mechanism Parts Adjustments

For details on the adjustments and checks of mechanical section and replacements of mechanism parts, refer to the separate volume-
“8 mm Video Mechanism Adjustment Manual VII [B Mechanism]”.

2-1. OPERATING WITHOUT A CASSETTE

- 1) Refer to “Section 2 DISASSEMBLY” and supply the power with the cabinet removed (So that the mechanical deck can be operated)
- 2) Connect the adjusting remote commander to the LANC terminal
- 3) Turn on the HOLD switch of the adjusting remote commander.
- 4) Close the cassette compartment without loading a cassette and complete loading
- 5) Select page 0, address 01, and set data 01
- 6) Select page: F, address 2A, and set data 01, and press the PAUSE button of the adjusting remote commander
- 7) Select page D, address 10, and set data 10, and press the PAUSE button of the adjusting remote commander
- 8) Disconnect the power supply of the unit
By carrying out the above procedure, the unit can be operated without loading a cassette
Be sure to carry out “Processing after Operations” after checking the operations
Set the data of page D, address 10 to the following if the sensor ineffective mode, forced PLAYER (VTR) power supply ON mode or forced camera power supply ON mode are to be used together

Forced VTR power supply ON mode . . . 12

Forced camera power supply ON mode . . . 11

[Processing after Operations]

- 1) Select page 0, address 01, and set data 01
- 2) Select page: F, address 2A, and set data 00, and press the PAUSE button of the adjusting remote commander
- 3) Select page D, address: 10, and set data 00, and press the PAUSE button of the adjusting remote commander
- 4) Select page 0, address 01, and set data 00
- 5) Disconnect the power supply of the unit

2-2. TAPE PATH ADJUSTMENT

1. Preparations for adjustments

- 1) Clean the tape path face (tape guide, drum, capstan shaft, pinch roller)
- 2) Connect the adjusting remote commander to the LANC terminal
- 3) Turn on the HOLD switch of the adjusting remote commander
- 4) Select page 0, address 01, and set data 01
- 5) Select page F, address 2A, and set data 04 and press the PAUSE button of the adjusting remote commander
(Be sure to perform “Processing after operations” after completing adjustments

- 6) Connect the oscilloscope
Channel 1: Pin ⑥ of CN910 of VC-195 board
External trigger. Pin ⑪ of CN910 of VC-195 board
(Connect the oscilloscope via the CPC-7 jig)
(J-6082-382-A)

- 7) Playback the alignment tape for tracking
WR5-1NP For NTSC model: CCD-TRV15/ TRV15PK/
TRV25/ TRV25PK/ TRV35/
TRV65/ TRV65PK/ TRV85/
TRV93/ TRV215/ TRV615/
TRV815
WR5-1CP: For PAL model CCD-TRV15E/ TRV15EP/
TRV35E

- 8) Check that the RF waveform of the oscilloscope is flat at both the entrance and the exit
If not flat, perform necessary adjustment according to the separate
“8 mm Video Mechanical Adjustment Manual VII (B Mechanism)”.
- 9) Perform “Processing after operations”, after completing adjustments

Pin No.	Signal Name	Pin No	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

CN910 of VC-195 board

[Processing after operations]

- 1) Connect the adjusting remote commander, and turn on the HOLD switch
- 2) Select page: 0, address 01, and set data 01
- 3) Select page F, address 2A, and set data 00
- 4) Press the PAUSE buttonA of the adjusting remote commander
- 5) Select page 0, address 01, and set data 00
- 6) Remove the power supply from the unit.

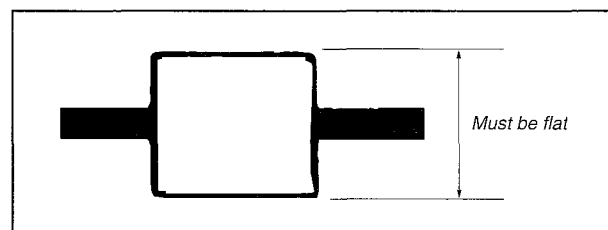


Fig. 5-2-1.

5-3. VIDEO SECTION ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 5-62.

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following adjusting instruments are used for adjusting the video section

3-1-1. Equipments to be Used

- 1) TV monitor
- 2) Oscilloscope 2 phenomena, band 30 MHz or wider, with delay mode (Use a 10 1 probe unless specified otherwise)
- 3) Frequency counter
- 4) Pattern generator with video output terminal
- 5) Digital voltmeter
- 6) Audio generator
- 7) Audio level meter
- 8) Audio distortion meter
- 9) Audio attenuator
- 10) Regulated power supply
- 11) Alignment tape

[For NTSC model]

- For tracking adjustment (WR5-1NP)
Part Code: 8-967-995-02
- For video frequency characteristics adjustment (WR5-7NE) Part Code 8-967-995-13
- For checking Standard 8 mode operations
For LP (WR5-4NL)
Part Code: 8-967-995-51
For SP (WR5-5NSP)
Part Code: 8-967-995-42

Note: The following alignment tapes can also be used
WR5-4NSP (8-967-995-41)

- For checking Hi8 mode operations
For SP (WR5-8NSE)
Part Code 8-967-995-43
For LP (WR5-8NLE)
Part Code: 8-967-995-52
- For checking AFM stereo operations (WR5-9NS)
Part Code: 8-967-995-23
For checking BPF adjustment (WR5-11NS)
Part Code: 8-967-995-71

[For PAL model]

- For tracking adjustment (WR5-1CP)
Part Code: 8-967-995-07
- For video frequency characteristics adjustment (WR5-7NE) Part Code 8-967-995-18
- For checking Standard 8 mode operations
For LP (WR5-4CL)
Part Code: 8-967-995-56
For SP (WR5-5CSP)
Part Code: 8-967-995-47

Note: The following alignment tapes can also be used

- 1) WR5-3CL (8-967-995-36)
- 2) WR5-4CSP (8-967-995-46)

- For checking AFM stereo operations (WR5-9CS)
Part Code: 8-967-995-28
For checking BPF adjustment (WR5-11CS)
Part Code: 8-967-995-76

12) Remote commander for adjustment (J-6082-053-B)

13) CPC-7 jig Part Code J-6082-382-A

Note : Connect the adjusting remote commander to the LANC jack, and set the HOLD switch to the "ADJ" side

14) Power code Part Code: J-6082-223-A

15) AFM DEV jig (J-6082-312-A)

16) IR Receiving jig (J-6082-383-A)

17) Extension cable (48P, 0 8mm) (J-6082-188-A)

3-1-2. Precautions on Adjusting

- 1) The adjustments of this unit are performed in the VTR mode or camera mode
 To set to the VTR mode, set the power switch to "VTR" (or "PLAYER") or set the "Forced VTR Power ON mode" using the adjusting remote commander (Note 1).
 To set to the Camera mode, set the power switch to "CAMERA" or set the "Forced Camera Power ON mode" using the adjusting remote commander (Note 2).
 After completing adjustments, be sure to exit the "Forced VTR Power ON Mode" or "Forced Camera Power ON Mode" (Note 3)
- 2) By setting the "Forced VTR Power ON mode" or "Forced Camera Power ON mode", the video section can be operate even if even if the front panel block (MA-311/312/331 board, power switch, microphone unit) has been removed. When removing the front panel block disconnect the following connector
 1. VC-195 board CN903 (23P 0.5mm)
- 3) The lens block (CD-197/198 board) need not be connected except during battery end adjustment. To remove, disconnect the following connectors
 - 1 VC-195 board CN501 (16P, 0.5mm)
 - 2 VC-195 board CN551 (23P, 0.5mm)
- 4) The intelligent accessory shoe (Intelligent accessory shoe model) or video light (Video light model) need not be assembled. If removing it, disconnect the following connector.
 - 1 VC-195 board CN909 (10P, 0.5mm)
- 5) Cabinet (R) (Camera function switch (CF-50/51board), LCD block, viewfinder) need not be connected. But removing the cabinet (R) (removing the VC-195 board CN911) means removing the lithium 3V power supply (CF-50/51 board), data such as date, time, user-set menus will be lost. After completing adjustments, reset these data. If the cabinet (R) has been removed, the self-diagnosis data, data on history of use (total drum rotation time etc.) will be lost. Before removing, note down the self-diagnosis data and data on the history use (Refer to the "Service Mode" for the data on the history use). To remove the cabinet (R), disconnect the following connectors
 1. VC-195 board CN911 (50P, 0.5mm)
 - 2 DD-105 board CN933 (11P, 1.0mm)

Note 1: Setting the "Forced VTR Power ON" mode (VTR mode)

- 1) Select page 0, address 01, and set data 01.
- 2) Select page D, address 10, set data 02, and press the PAUSE button of the adjusting remote commander

The above procedure will enable the VTR power to be turned on with the front panel block removed

After completing adjustments, be sure to exit the "Forced VTR Power ON mode"

Note 2: Setting the "Forced Camera Power ON" mode (Camera mode)

- 1) Select page 0, address 01, and set data 01
- 2) Select page D, address 10, set data 01, and press the PAUSE button of the adjusting remote commander.

The above procedure will enable the camera power to be turned on with the front panel block removed

After completing adjustments, be sure to exit the "Forced Camera Power ON mode"

Note 3: Exiting the "Forced Power ON" mode

- 1) Select page 0, address 01, and set data 01
- 2) Select page D, address: 10, set data. 00, and press the PAUSE button of the adjusting remote commander
- 3) Select page 0, address: 01, and set data 00

3-1-3. Adjusting Connectors

Some of the adjusting points of the video section are concentrated at VC-195 board CN910. Connect the measuring instruments via the CPC-7 jig (J-6082-382-A). The following table lists the pin numbers and signal names of CN910.

Pin No	Signal Name	Pin No	Signal Name
1	LANC SIG	9	RF AGC OUT
2	XCPC IN	10	REC RF
3	IR VIDEO	11	RF SWP
4	AFC F0	12	CAP FG
5	BPF MONI	13	EVF BL
6	PB RF	14	EVF BL 4.75V
7	RF AGC IN	15	VCO
8	REG GND	16	EVF VG

Table 5-3-1.

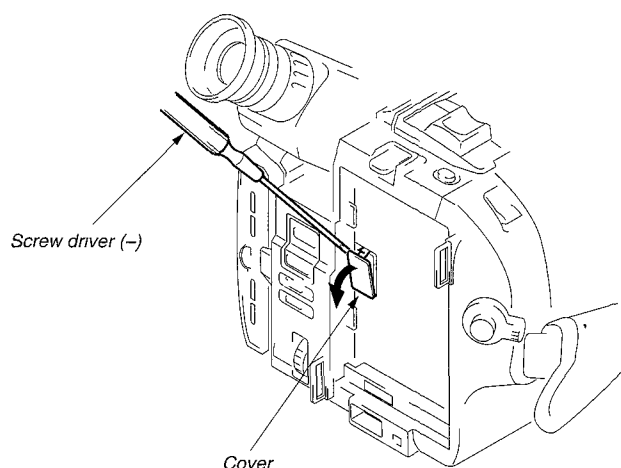


Fig. 5-3-1.

3-1-4. Connecting the Equipments

Connect the measuring instruments as shown in Fig 5-3-2 and perform the adjustments

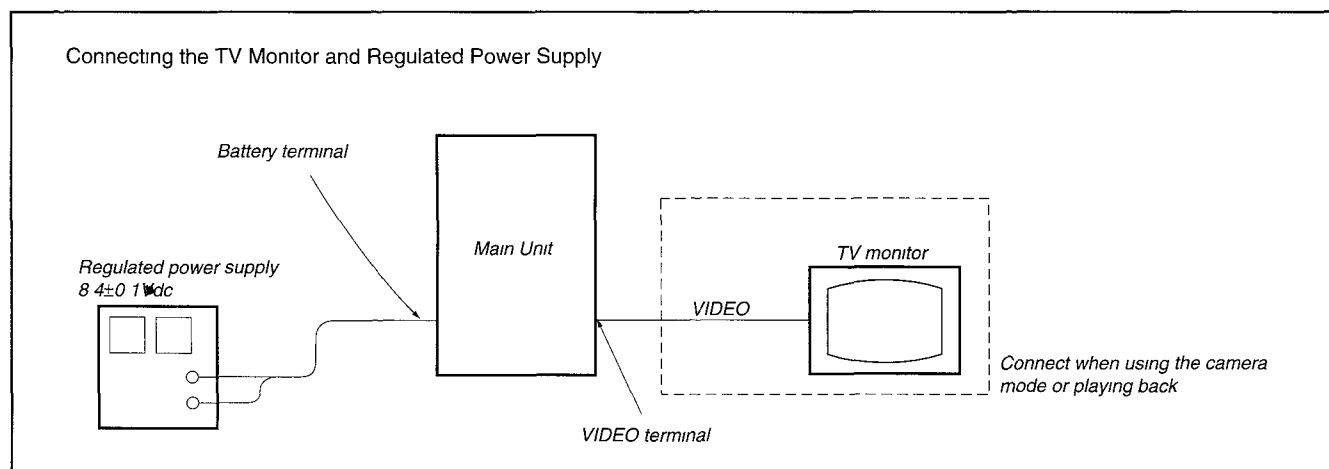


Fig. 5-3-2.

3-1-5. Alignment Tape

The following table lists alignment tapes which are available
Use the tape specified in the signal column for each adjustment
If the type of tape to be used for checking operations is not specified, use whichever type

Name	Record-ing mode	Tape type	Tape speed	Usage
Tracking WR5-1NP (NTSC) WR5-1CP (PAL)	Standard 8 mm	MP	SP	Tape path adjustment Switching position adjustment
Video frequency characteristics WR5-7NE (NTSC) WR5-7CE (PAL)	H18	ME	SP (NTSC) LP (PAL)	Frequency characteristics adjustment
Operation check (SP mode) WR5-5NSP (NTSC) WR5-5CSP (PAL)	Standard 8 mm	MP	SP	Checking operations
Operation check (SP mode) WR5-8NSE (NTSC) WR5-8CSE (PAL)	H18	ME	SP	
Operation check (LP mode) WR5-4NL (NTSC) WR5-4CL (PAL)	Standard 8 mm	MP	LP	
Operation check (LP mode) WR5-8NLE (NTSC) WR5-8CLE (PAL)	H18	ME	LP	
AFM stereo Operation check WR5-9NS (NTSC) WR5-9CS (PAL)	Standard 8 mm	MP	SP	AFM stereo Checking operations
BPF adjustment WR5-11NS (NTSC) WR5-11CS (PAL)	Standard 8 mm	MP	SP	BPF adjustment

Tape type

MP ... Particle type metal tape

ME ... Evaporated type metal tape

Table 5-3-2.

Fig. 5-3-3. shows the 75% color bar signals recorded on the alignment tape.

Note: Measure using the VIDEO terminal (Terminated at 75 Ω).

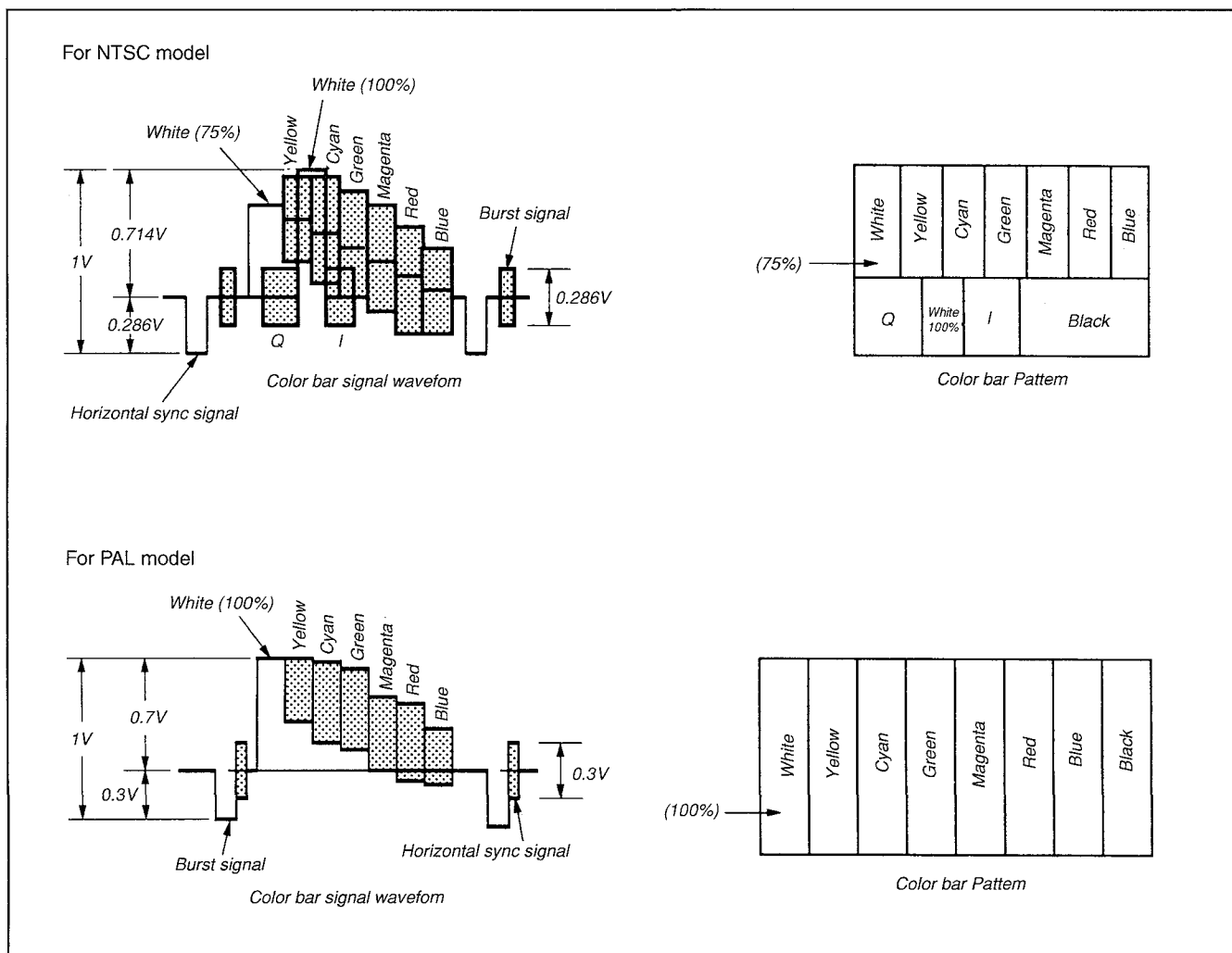


Fig. 5-3-3. Color Bar Signals of the Alignment Tape

3-1-6. Input/Output Level and Impedance

Video input/output

Phono jack, 1 Vp-p, 75Ω,
unbalanced, sync negative

S video input/output (Hi8 model)

4-pin mini DIN

Luminance signal.

1 Vp-p, 75Ω, unbalanced, sync negative

Chrominance signal

0.286Vp-p 75Ω, unbalanced (NTSC)

0.3Vp-p 75Ω, unbalanced (PAL)

Audio input/output

Phono jack,

Input -7.5 dBs, input impedance more
than 47 kΩ

Output -7.5 dBs, (at load impedance 47 kΩ),
impedance less than 2.2 kΩ

3-1-7. Recording Mode (Standard 8/Hi8) switching (Hi8 model)

The record mode (Standard 8/Hi8) of this unit switches as shown in the following table. The playback mode (Standard 8/Hi8) switches automatically according to the recording mode of the tape played back.

Tape Used	Recording Mode
ME	Hi8
Hi8 MP	
MP	Standard 8

3-1-8. Service Mode

Additional note on adjustment

Note: After the completion of the all adjustments, cancel the service mode by either of the following ways.

- 1) Unplug the main power supply and remove the lithium battery (In this case, date and time and menu setting have been set by users are canceled. Perform resetting.)
- 2) After data on page D and F is restored, select page: 0, address: 01, and return the data to 00. And when data on page: 3 is changed, return the data to the original condition.

1. Test mode setting

Set/release each test mode. Select page: 0, address: 01, and set data: 01 before setting the data of page D and F.

Page F	Address 2A
--------	------------

Data	Function
00	Normal
01	Test mode Various emergency prohibitions and releases Drum emergency, capstan emergency, loading motor emergency, reel emergency, tape top and end, DEW detection

Page D	Address 10
--------	------------

Data	Function
00	Normal
01	Camera power ON
02	VTR power ON
03	Camera+VTR power ON

- * For page D and F, the data set will be recorded in the nonvolatile memory by pressing the PAUSE button on the adjusting remote commander. Take note that, in this case, the test mode will not be released even if the main power has been turned off (8.4 Vdc).
- + Be sure to return this address data to 00 after completing adjustments/repairs and press the PAUSE button of the adjusting remote commander. And select page: 0, address: 01, and set data: 00.

2. Emergency Memory Address

Page F	Address 10 to 1B
--------	------------------

Address	Contents
10	1st EMG code
12	Upper MSW code when the mechanism starts shifting the 1st time Lower MSW code when the 1st emergency occurs
13	Lower Target MSW code of the 1st emergency occurs
14	2nd EMG code
16	Upper MSW code when the mechanism starts shifting the 2nd time Lower MSW code when the 2nd emergency occurs
17	Lower Target MSW code of the 2nd emergency occurs
18	Last EMG code
1A	Upper MSW code when the mechanism starts shifting the last time Lower MSW code when the last emergency occurs
1B	Lower Target MSW code of the last emergency occurs

When there are no emergency, data 00 will be written in the above addresses (10 to 1B). When the first emergency occurs, the data corresponding to the emergency will be written in the address (10 to 13) for this first emergency. In the same way, when the second emergency occurs, the data corresponding to the emergency will be written in the address (14 to 17) for this second emergency. The data corresponding to the emergency occurring the last will be written in the address (18 to 1B) for this last emergency. Therefore the data of addresses 18 to 1B are renewed each time an emergency occurs.

Note 1: Be sure to rewrite the data of addresses 10 to 1B to 00 after repairs/adjustments

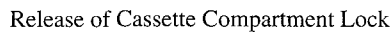
Note 2: When rewriting the data, be sure to press the PAUSE button of the remote commander after setting the data.

2-1. EMG CODE (Emergency Code)

The codes shown in the following table which correspond to errors that occur are recorded in addresses 10, 14, and 18

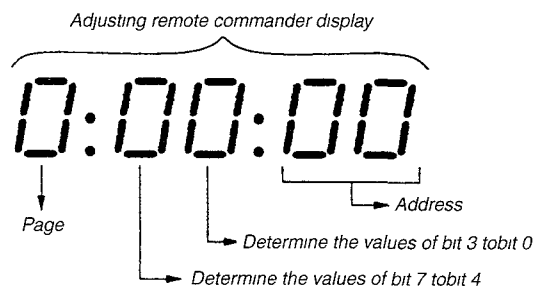
Code	Type of Emergency
00	No error
10	Loading motor time-out during load
11	Loading motor time-out during unload
20	T reel emergency (reel slack) during unloading
21	S reel emergency (reel slack) during unloading
22	T reel emergency
23	S reel emergency
30	FG emergency at the start up of the capstan
31	FG emergency during the normal rotation of the capstan
40	FG emergency at the start up of the drum
41	PG emergency at the start up of the drum
42	FG emergency during the normal rotation of the drum
43	PG emergency during the normal rotation of the drum
44	Phase emergency during the normal rotation of the drum

- The lower parts of the data of addresses 12, 16 and 1A represent the MSW codes (mode switch, mechanism position) when errors occurs.
- The upper parts of the data of addresses 12, 16 and 1A represent, when the mechanism position is to be moved, the MSW codes at the start of movement (when moving the loading motor)
- The lower parts of the data of addresses 13, 17 and 1B represent the MSW codes of the desired movement when the mechanism position is to be moved.

5-41

3. Bit value discrimination

Bit values must be discriminated using the display data of the adjusting remote commander for the following items. Use the table below to discriminate if the bit value is “1” or “0”.



Remote controller display	Bit value			
	bit 3 or bit 7	bit 2 or bit 6	bit 1 or bit 5	bit 0 or bit 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
Ⓐ→ 8	1	0	0	0
9	1	0	0	1
A (H)	1	0	1	0
B (b)	1	0	1	1
C (c)	1	1	0	0
D (d)	1	1	0	1
Ⓑ→ E (E)	1	1	1	0
F (F)	1	1	1	1

(Example) If the remote commander display data is “8E”, bit values from bit7 to bit4 can be discriminated from column Ⓐ, and those from bit3 to bit0 from column Ⓑ

4. Switch check (1)

Page 3		Address 43	
Bit	Function	When bit value=1	When bit value=0
0	VTR MODE SW	OFF	ON
1	CAM MODE SW	OFF	ON
2	START/STOP SW	OFF	ON
3	EJECT SW	OFF	ON
4	CC DOWN SW	OFF	ON
5			
6			
7			

Using method

- 1) Select page 3, address 43
- 2) By discriminating the bit value of display data, the state of the switches can be discriminated.

5. Switch check (2)

Page 3	Address 60 to 66
--------	------------------

Using method

- 1) Select page: 3, address 60 to 66
- 2) By discriminating the display data, the pressed key can be discriminated

Address	Data							
	00 to 0D	0E to 29	2A to 46	47 to 68	69 to 90	91 to BE	BF to EA	EB to FF
60 (AD0 IC604 ㉓)	LASER LINK (FK-8500 S008)	STOP (FK-8500 S001)	FF (FK-8500 S003)	REC (FK-8500 S005, 007)	EDIT SEARCH (+) (FK8500 S009)	EDIT SEARCH (-) (FK8500 S010)		No key input
61 (AD1 IC604 ㉔)		PAUSE (FK-8500 S002)	REW (FK-8500 S004)	PLAY (FK-8500 S006)				No key input
62 (AD2 IC604 ㉕)		PICTURE EFFECT (CF-50/51 S006)	MENU (CF-50/51 S010)	EXECUTE (CF-50/51 S015)	TIME (CF-50/51 S021)	5sec REC (CF-50/51 S024)	PUSHING REC (CF-50/51 S024)	NORMAL REC (CF-50/51 S024)
64 (AD4 IC604 ㉗)			EXPOSURE (CF-50/51 S012)	BACK LIGHT (CF-50/51 S017)	FADER (CF-51 S027 or MF-8500 S002)	FOCUS INFINITY (MF/MR-8500 S001)	FOCUS AUTO (MF/MR-8500 S001)	FOCUS MANUAL (MF/MR-8500 S001)
65 (AD5 IC604 ㉘)	DATE (CF-50/51 S003)	COUNTER RESET (CF-50/51 S008)	END SEARCH (CF-50/51 S013)	TITLE (CF-50/51 S018)	DISPLAY (CF-50/51 S022)			No key input
66 (AD6 IC604 ㉙)	PROGRAM AE (CF-50/51 S004)	BRIGHT(+) (PD-92 S5801 PD-93 S4801)	BRIGHT(-) (PD-92 S5802 PD-93 S4802)	VOLUME(+) (PD-92 S5803 PD-93 S4803)	VOLUME(-) (PD-92 S5804 PD-93 S4804)	PANEL REVERSE (FP-642)	PANEL CLOSE (FP-642)	PANEL NORMAL (FP-642)

6. Headphone jack check

Page 3	Address 45
--------	------------

Bit	Function	When bit value=1	When bit value=0
1	Headphone jack	Headphone jack is used	

Using method

- 1) Select page. 3, address 45
- 2) By discriminating the bit value of display data, the state of the headphone jack can be discriminated.

7. Input/output selection check

Page 3	Address 49
--------	------------

Bit	Function	When bit value=1	When bit value=0
1			
2			
3			
4	MIC jack	MIC jack is used	
5	AUDIO terminal	Monaural	Stereo
6	VIDEO terminal	VIDEO terminal is used	
7	S VIDEO terminal		S VIDEO terminal is used

Using method.

- 1) Select page 3, address: 49
- 2) By discriminating the bit value of display data, the state of the input/output selection can be discriminated

8. LED, LCD (display window) check

Page 3	Address 05	Bit5
--------	------------	------

Using method:

- 1) Select page 3, address 05, and set the bit value of Bit5 to "1"
- 2) Check that all LED are lit and all segments of LCD (display window) are lit.
- 3) Select page: 3, address 05, and set the bit value of Bit5 to "0"

9. Record of Use Check

Page 3	Address A2 to AA
--------	------------------

Address	Function		Remarks
A2	Drum rotation counted time (BCD code)	Hour (H)	1000th place digit and 100th place digit of counted time (decimal digit)
A3		Hour (L)	10th place digit and 1st place digit of counted time (decimal digit)
A4		Minute	
A5	User initial power on date (BCD code)	Year	After setting the clock, set the date of power on next
A6		Month	
A7		Day	
A8	Final condensation occurrence date (BCD code)	Year	
A9		Month	
AA		Day	

Using method

- 1) The record of use data is displayed at page 3, addresses A2 to AA.

Note: This data will be erased when the coin lithium battery is removed (reset)

3-2. SYSTEM CONTROL SYSTEM ADJUSTMENT

1. Initialization of D, E, F Page Data

If the D, E, F page data is erased due to some reason, perform "1-2. INITIALIZATION OF D, E, F PAGE DATA", of "5-1. CAMERA SECTION ADJUSTMENT".

2. Battery End Adjustment (VC-195 board)

Set the battery end voltage.

If the voltage is incorrect, the life of the battery will shorten.

The image at the battery end will also be rough.

Mode	Camera recording
Subject	Arbitrary
Measurement Point	LCD display of the adjusting remote commander
Measuring Instrument	
Adjustment Page	D
Specified value	30 to 34

Note 1: The lens block and cabinet (R) must be connected.

Switch setting

- 1) AUTO FOCUS OFF
- 2) LCD screen Closed
- 3) NIGHT SHOT OFF
(NIGHT SHOT model)
- 4) VIDEO LIGHT OFF
(VIDEO LIGHT model)

Connection:

- 1) Connect the regulated power supply and the digital voltmeter to the battery terminal as shown in Fig. 5-3-4.

Adjusting method:

- 1) Adjust the output voltage of the regulated power supply so that the digital voltmeter display is $6.1 \pm 0.1 \text{ Vdc}$.
- 2) Turn off the power supply.
- 3) Turn on the HOLD switch of the adjusting remote commander.
- 4) Turn on the power supply.
- 5) Load a cassette, and set to the camera recording mode.
- 6) Select page: 0, address: 01, and set data: 01.
- 7) Decrease the output voltage of the regulated power supply so that the digital voltmeter display is $5.30 \pm 0.01 \text{ Vdc}$.
- 8) Select page: 3, address: 5D, read the data, and this data is named Dref.
- 9) Select page: D, address: 30, set data: Dref, and then press the PAUSE button of the adjusting remote commander.
- 10) Convert Dref to decimal notation, and obtain Dref'. (Refer to Table 5-1-2. "Hexadecimal-decimal conversion table")
- 11) Calculate D_{31}' , D_{32}' , D_{33}' and D_{34}' using following equations (decimal calculation), convert it to a hexadecimal number, and input each adjustment address.

$$\text{Address: } D_{31} \quad D_{31}' = \text{Dref}' + 5$$

$$\text{Address: } D_{32} \quad D_{32}' = \text{Dref}' + 32$$

$$\text{Address: } D_{33} \quad D_{33}' = \text{Dref}' + 53$$

$$\text{Address: } D_{34} \quad D_{34}' = \text{Dref}' + 64$$

Note 3: After setting each data, be sure to press the PAUSE button.

- 12) Select page: 0, address: 01, and set data: 00.

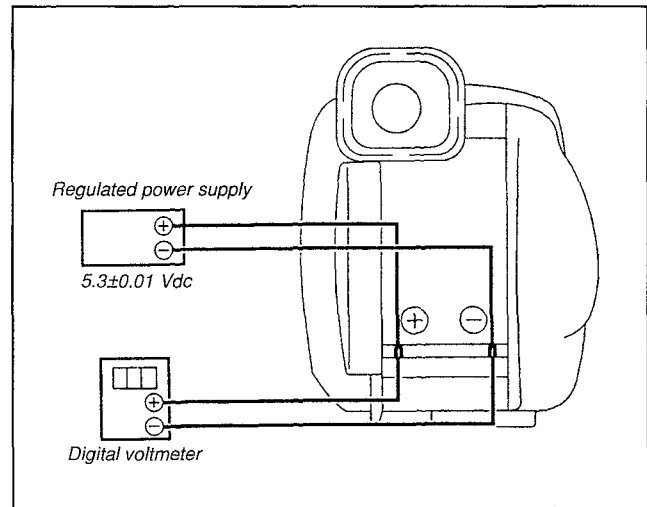


Fig. 5-3-4.

3-3. SERVO SYSTEM ADJUSTMENTS

1. CAP FG Offset Adjustment (VC-195 board)

Improve the capstan servo characteristic. If it is not correct, jitters will increase.

Mode	Camera recording (SP mode)
Subject	Arbitrary
Measurement Point	Pin ⑫ of CN910 (CAP FG)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	69
Specified value	Duty = $50 \pm 1\%$

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 2, address: 01, and set data: 81, and press the PAUSE button of the adjustment remote commander. (to start up automatic CAP FG offset adjustment.)
- 3) Select page: 2, address: 02, and check that the data is "01".
- 4) Check that Duty of CAP FG signal satisfies the specified value. If not, select page: 2, address: 01, set data: 00, and press the PAUSE button, and then, repeat steps 2) to 4).
- 5) Select page: 2, address: 01, and set data: 00, and press the PAUSE button of the adjustment remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

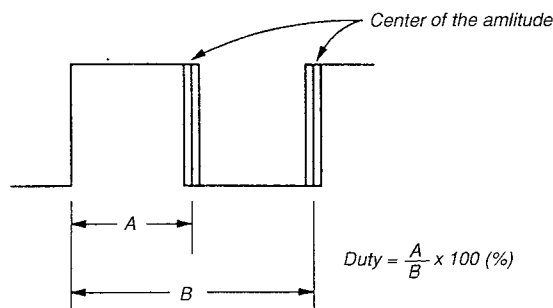


Fig. 5-3-5.

2. Switching Position Adjustment (VC-195 Board)

If deviated in this cases switching noise or jitter on the played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC)) (WR5-1CP (PAL))
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7C, 7D
Specified Value	$t1 = 0 \pm 10 \mu\text{sec}$

Note 1: NTSC MODEL: CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV35/ TRV65/ TRV65PK/ TRV85/ TRV93/ TRV215/ TRV615/ TRV815
PAL MODEL: CCD-TRV15E/ TRV15EP/ TRV35E

Adjusting Method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 2A, and set data: 20, and press the PAUSE button of the adjustment remote commander.
- 3) Select page: F, address: 7C, change the data and minimize "t1", and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
- 4) Select page: F, address: 7D, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
- 5) Press the PAUSE button of the adjustment remote commander.
- 6) Select page: F, address: 2A, and set data: 00, and press the PAUSE button of the adjustment remote commander.
- 7) Select page: 0, address: 01, and set data: 00.

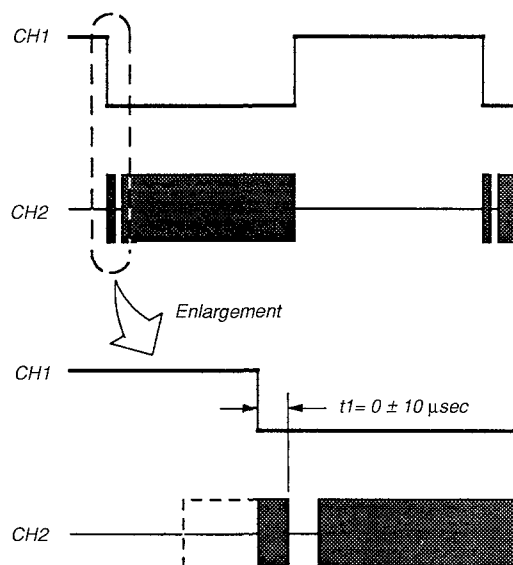


Fig. 5-3-6.

3. NTSC LP Mode Switching Position Adjustment (VC-195 Board) (CCD-TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)

If deviated in this cases switching noise or jitter on the LP mode played back screen.

Mode	Playback
Signal	Alignment tape: For tracking adjustment (WR5-1NP (NTSC))
Measurement Point	CH1: Pin ⑪ of CN910 (RF SWP) CH2: Pin ⑥ of CN910 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	7E, 7F
Specified Value	$t1 = 0 \pm 10 \mu\text{sec}$

Adjusting Method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: F, address: 2A, set data: 60, and then press the PAUSE button of the adjustment remote commander.
- 3) Select page: F, address: 7E, change the data and minimize "t1", and then press the PAUSE button of the adjustment remote commander. (Coarse adjustment)
- 4) Select page: F, address: 7F, change the data and adjust so that the switching position (t1) becomes the specified value. (Fine adjustment)
- 5) Select page: F, address: 2A, set data: 00, and then press the PAUSE button of the adjustment remote commander.
- 6) Press the PAUSE button of the adjustment remote commander.
- 7) Select page: 0, address: 01, and set data: 00.

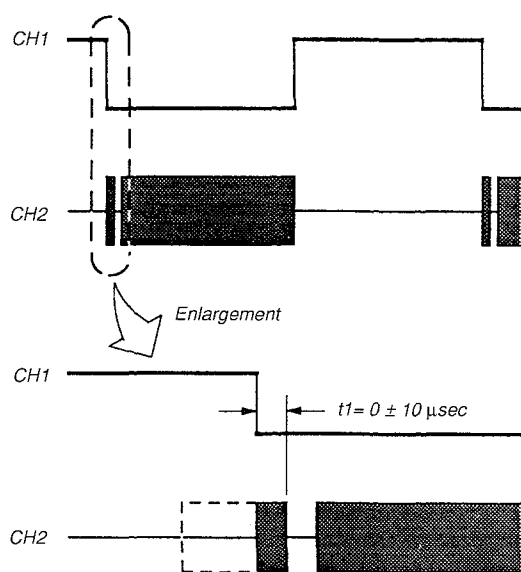


Fig. 5-3-7.

3-4. VIDEO SYSTEM ADJUSTMENTS

Video system adjustments must be performed in the following order.

[Adjusting Order]

1. 28MHz origin oscillation adjustment
2. AFC f0 adjustment
3. Filter f0 adjustment
4. Y OUT level adjustment
5. C OUT level adjustment
6. RP filter f0 adjustment
7. Hi8 REC Y current adjustment
8. Standard REC Y current adjustment
9. Hi8 REC L level adjustment
10. Standard8 REC L level adjustment
11. REC C current adjustment

1. 28 MHz Origin Oscillation Adjustment (VC-195 board)

Set the frequency of the clock for synchronization.

If deviated, the synchronization will be disrupted and the color will become inconsistent.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑥ of IC202 or pin ⑫ of IC501
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	2C
Specified Value	Pin ⑥ of IC202 : $f = 3579545 \pm 17 \text{Hz}$ (NTSC) $f = 4433618.75 \pm 17 \text{Hz}$ (PAL) Pin ⑫ of IC501 : $f = 14318181 \pm 68 \text{Hz}$ (NTSC) $f = 14187500 \pm 55 \text{Hz}$ (PAL)

Note 1: NTSC MODEL: CCD-TRV15/ TRV15PK/ TRV25/
TRV25PK/ TRV35/ TRV65/
TRV65PK/ TRV85/ TRV93/ TRV215/
TRV615/ TRV815

PAL MODEL: CCD-TRV15E/ TRV15EP/ TRV35E

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: 2, address: 61, and set data: 30.
- 4) Select page: F, address: 2C, change the data and set the clock frequency(f) to the specified value.
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 2, address: 61, and set data: 10.
- 7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

2. AFC f0 Adjustment (VC-195 board)

Adjust the pull-in range of the A/D converted clock generator during playback

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ④ of CN910 (AGC f0)
Measuring Instrument	Digital voltmeter
Adjustment Page	F
Adjustment Address	4A
Specified Value	$A = 2.10 \pm 0.05 \text{Vdc}$

Adjusting method.

- 1) Select page 0, address 01, and set data 01.
- 2) Select page 3, address 01, set data 4D, and press the PAUSE button of the adjusting remote commander
- 3) Select page F, address 4A, change the data and set the DC voltage (A) to the specified value
- 4) Press the PAUSE button of the adjusting remote commander
- 5) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 6) Select page 0, address 01, and set data 00.

3. Filter f0 Adjustment (VC-195 board)

Minimize the chroma signal residual components during composite video signal input.

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ③ of CN910 (IR VIDEO)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4D
Specified Value	Minimum residual chroma signal components (Below 12mV)

Switch setting.

LASER LINK ON (Red LED is lit)

Adjusting method

- 1) Select page 0, address 01, and set data 01
- 2) Select page 3, address 01, set data 4F, and press the PAUSE button of the adjusting remote commander.
- 3) Select page F, address 4D, change the data and minimize the residual chroma signal components (A)
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander.
- 6) Select page 0, address 01, and set data 00

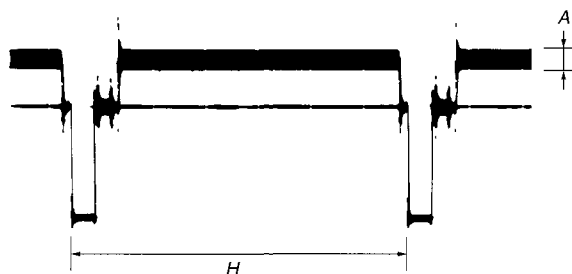


Fig. 5-3-8.

4. Y OUT Level Adjustment (VC-195 board)

Set the Y signal output level.

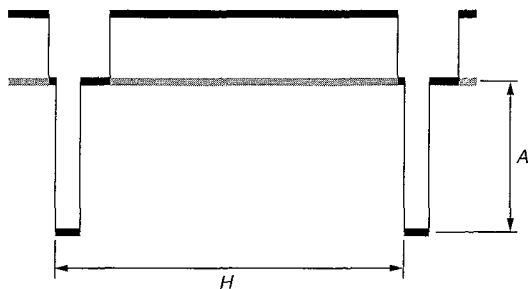
Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Y signal terminal of S VIDEO terminal (75 Ω terminated) Standard 8 model : VIDEO terminal (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	49
Specified Value	A = 286 $\pm$ 5mV (NTSC) A = 300 $\pm$ 5mV (PAL)

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: 2, address: 61, and set data: 30.
- 4) Select page: F, address: 49, change the data and set the SYNC level (A) to the specified value.
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 2, address: 61, and set data: 10.
- 7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard 8 model

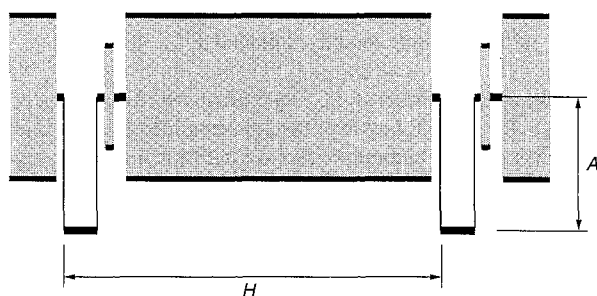


Fig. 5-3-9.

5. C OUT Level Adjustment (VC-195 board)

Set the chroma signal output level.

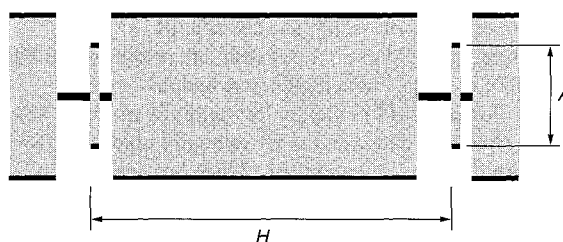
Mode	VTR stop
Signal	No signal
Measurement Point	Hi8 model : Chroma signal terminal of S VIDEO terminal (75 Ω terminated) Standard 8 model : VIDEO terminal (75 Ω terminated)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4B
Specified Value	A = 286 $\pm$ 5mV (NTSC) A = 300 $\pm$ 5mV (PAL)

Note 1: Insert the plug into the S video terminal (Hi8 model)

Adjusting method:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
- 3) Select page: 2, address: 61, and set data: 30.
- 4) Select page: F, address: 4B, change the data and set the burst level (A) to the specified value.
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 2, address: 61, and set data: 10.
- 7) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 8) Select page: 0, address: 01, and set data: 00.

Hi8 model



Standard 8 model

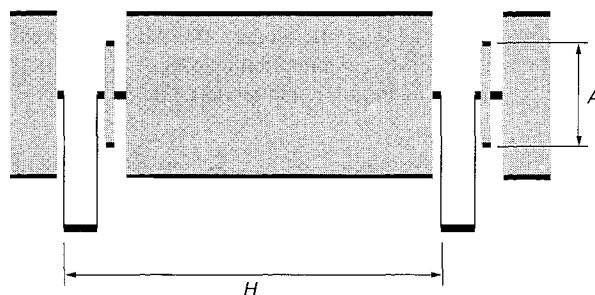


Fig. 5-3-10.

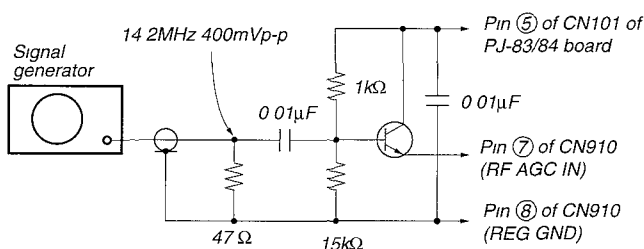
6. RP Filter f0 Adjustment (VC-195 board)

Adjust the LPF of the playback RF amplifier

Mode	VTR stop
Signal	No signal
Measurement Point	Pin ⑨ of CN910 (RF AGC OUT)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	4E
Specified Value	A = Below 10mVp-p

Connection

- 1) Input a 14.2 MHz, 400mVp-p CW signal to Pin ⑦ of CN910 (RF AGC IN)



Transistor General NPN transistor (2SC403 etc)

47Ω resistor 1-249-401-11

1kΩ resistor 1-249-417-11

15kΩ resistor 1-249-431-11

0.01μF capacitor 1-101-004-00

Fig. 5-3-11.

Adjusting method

- 1) Select page 0, address 01, and set data: 01
- 2) Select page: 3, address: 01, set data 35, and press the PAUSE button of the adjusting remote commander.
- 3) Only for Standard8 model, select page D, address 15, after memorizing the data, set the bit value of bit0 to "1" (Refer to "3 Bit value discrimination" of "3-1-8 Service mode")
- 4) Select page F, address: 4E, change the data and minimize the 14.2 MHz signal level (A).
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page D, address 15, and set the data memorized at step 3), and press the PAUSE button of the adjusting remote commander
- 7) Select page. 3, address: 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 8) Select page 0, address: 01, and set data 00

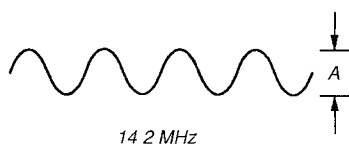


Fig. 5-3-12.

7. Hi8 REC Y Current Adjustment (VC-195 board) (CCD-TRV85/TRV93/TRV615/TRV815)

Adjust the Y FM signal recording current

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = 160±5mV (NTSC)

Adjusting method

- 1) Insert a tape, set to recording mode
- 2) Select page 0, address 01, and set data: 01
- 3) Select page F, address 5C, after note down the data, set data: FF, and press the PAUSE button of the adjusting remote commander
- 4) Select page F, address 65, after note down the data, set data 00, and press the PAUSE button of the adjusting remote commander
- 5) Select page 3, address 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
- 6) Select page F, address: 54, change the data and set the Y signal level (A) to the specified value
- 7) Press the PAUSE button of the adjusting remote commander
- 8) Select page. F, address 54, and read the data (D54)
- 9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2 Hexadecimal-Decimal conversion Table)

$$\text{Address } 53 \quad D_{53} = D_{54}$$

$$\text{Address } 55 \quad D_{55} = D_{54} + 10$$

$$\text{Address } 56 \quad D_{56} = D_{54} + 10$$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander

- 10) Write the following data in page F, address 57 to 5A

Address	Data
57	A0
58	80
59	90
5A	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

- 11) Select page F, address 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander
- 12) Select page F, address 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander.
- 13) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 14) Select page 0, address. 01, and set data: 00

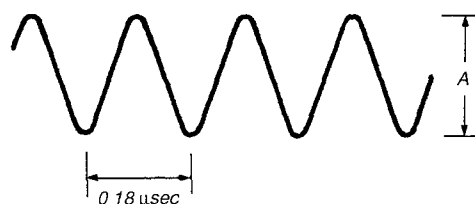


Fig. 5-3-13.

8. Standard8 REC Y Current Adjustment (VC-195 board) (CCD-TRV15/ TRV15E/ TRV15EP/ TRV15PK/ TRV25/ TRV25PK/ TRV35/ TRV35E/ TRV215)

Adjust the Y FM signal recording current

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20 MHz BW LIMIT OFF)
Adjustment Page	F
Adjustment Address	53 to 5A
Specified Value	A = $170 \pm 5\text{mV}$ (NTSC) A = $185 \pm 5\text{mV}$ (PAL)

Note 1: NTSC MODEL CCD-TRV15/ TRV15PK/ TRV25/
TRV25PK/ TRV35/ TRV215
PAL MODEL. CCD-TRV15E/ TRV15EP/ TRV35E

Preparations only for the model without REC switch

- 1) Select page 0, address 01, and set data: 01
- 3) Select page D, address 14, after memorizing the data, set the bit value of bit1 to "1" (Refer to "3 Bit value discrimination" of "3-1-8 Service mode").
- 4) Select page D, address 15, after memorizing the data, set the bit value of bit7 to "0"
- 5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method

- 1) Insert a tape, set to recording mode
- 2) Select page: 0, address 01, and set data: 01
- 3) Select page: F, address 5C, after note down the data, set data FF, and press the PAUSE button of the adjusting remote commander
- 4) Select page F, address 65, after note down the data, set data 00, and press the PAUSE button of the adjusting remote commander
- 5) Select page 3, address 01, set data 41, and press the PAUSE button of the adjusting remote commander
- 6) Select page F, address 54, change the data and set the Y signal level (A) to the specified value
- 7) Press the PAUSE button of the adjusting remote commander
- 8) Select page: F, address 54, and read the data (D54)
- 9) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address (Refer to Table 5-1-2 Hexadecimal-Decimal conversion Table)

Address 53 $D_{53} = D_{54}$
Address 55 $D_{55} = D_{54}$
Address 56 $D_{56} = D_{54}$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander

- 10) Write the following data in page F, address: 57 to 5A

Address	Data	
	NTSC	PAL
57	80	80
58	80	80
59	80	80
5A	80	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander

- 11) Select page F, address 5C, set the data noted down at step 3), press the PAUSE button of the adjusting remote commander
- 12) Select page F, address: 65, set the data noted down at step 4), press the PAUSE button of the adjusting remote commander
- 13) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 14) Select page 0, address. 01, and set data 00

Processing after completed adjustment only for the model without REC switch

- 1) Select page 0, address. 01, and set data 01
- 2) Select page: D, address 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch"
- 3) Press the PAUSE button of the adjusting remote commander
- 4) Select page D, address 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch"
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page 0, address. 01, and set data 00

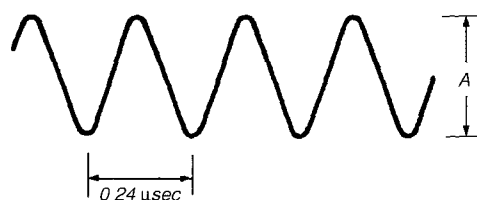


Fig. 5-3-14.

9. Hi8 REC L Level Adjustment (VC-195 board) (CCD-TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)

Set the recording levels of the REC AFM signal and REC ATF signal. If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly. If too high, color beets will be produced on the self-recording/playback image.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT: OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	$A = 10.1 \pm 0.6\text{mV}$ (NTSC)

Note 1: Do not insert a plug into the AUDIO (R) terminal.

Connection:

- 1) Remove C085 (0.01 μ F, Pin ⑩ of IC202).

Note: After completing "REC L Level Adjustment" and "REC C Current Adjustment", replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01 μ F 10% 25V).

Adjusting method:

- 1) Insert Hi8 ME tape, set to recording mode.
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 5) Select page: F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value.
- 6) Press the PAUSE button of the adjusting remote commander.
- 7) Select page: F, address: 5C, read the data (D5C).
- 8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2. Hexadecimal-Decimal conversion Table.)

Address: 5B	$D_{5B} = D_{5C}$
Address: 5D	$D_{5D} = D_{5C} - 0C$
Address: 5E	$D_{5E} = D_{5C} - 0C$
Address: 5F	$D_{5F} = D_{5C} + 12$
Address: 60	$D_{60} = D_{5C} + 12$
Address: 61	$D_{61} = D_{5C} + 13$
Address: 62	$D_{62} = D_{5C} + 13$

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

- 9) Write the following data in page: F, address: 63 to 64.

Address	Data
63	7C
64	78

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

- 10) Select page: 0, address: 01, and set data: 00.

- 11) Perform "REC C Current Adjustment".

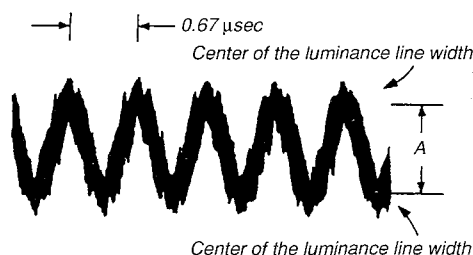


Fig. 5-3-15.

10. Standard8 REC L Level Adjustment (VC-195 board) (CCD-TRV15/ TRV15E/ TRV15EP/ TRV15PK/ TRV25/ TRV25PK/ TRV35/ TRV35E/ TRV215)

Set the recording levels of the REC AFM signal and REC ATF signal
If the level is too low, the audio S/N will deteriorated, tracking will not be stable, or SP/LP will not be discriminated properly If too high, color beets will be produced on the self-recording/playback image

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope (20MHz BW LIMIT OFF)
Adjustment Page	F
Adjustment Address	5B to 64
Specified Value	A = 9.6 ± 0.6 mV (NTSC) A = 9.3 ± 0.5 mV (PAL)

Note 1: NTSC MODEL: CCD-TRV15/ TRV15PK/ TRV25/
TRV25PK/ TRV35/ TRV215
PAL MODEL: CCD-TRV15E/ TRV15EP/ TRV35E

Note 2: Do not insert a plug into the AUDIO (R) terminal.

Connection

- 1) Remove C085 (0.01μF, Pin ⑩ of IC202).

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).

Preparations only for the model without REC switch

- 1) Select page 0, address: 01, and set data: 01
- 3) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3 Bit value discrimination” of “3-1-8 Service mode”)
- 4) Select page D, address: 15, after memorizing the data, set the bit value of bit7 to “0”
- 5) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method

- 1) Insert Srandrd8 MP tape, set to recording mode
- 2) Select page 0, address: 01, and set data: 01
- 3) Select page F, address: 5B, set data: FF, and press the PAUSE button of the adjusting remote commander
- 4) Select page F, address: 65, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 5) Select page F, address: 5C, change the data and set the REC AFM signal level (A) to the specified value
- 6) Press the PAUSE button of the adjusting remote commander
- 7) Select page: F, address: 5C, read the data (D5C)
- 8) Calculate the adjustment data (hexadecimal) from the following equations (hexadecimal calculation), and input each adjustment address. (Refer to Table 5-1-2 Hexadecimal-Decimal conversion Table)

Address: 5B	D _{5B} = D _{5C}
Address: 5D	D _{5D} = D _{5C}
Address: 5E	D _{5E} = D _{5C}
Address: 5F	D _{5F} = D _{5C}
Address: 60	D ₆₀ = D _{5C}
Address: 61	D ₆₁ = D _{5C}
Address: 62	D ₆₂ = D _{5C}

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander

- 9) Write the following data in page: F, address: 63 to 64.

Address	Data	
	NTSC	PAL
63	80	80
64	80	80

Note: After setting each data, be sure to press the PAUSE button of the adjusting remote commander.

- 10) Select page 0, address: 01, and set data: 00
- 11) Perform “REC C Current Adjustment”.

Processing after completed adjustment only for the model without REC switch.

- 1) Select page 0, address: 01, and set data: 01
- 2) Select page: D, address: 14, and set the data memorized at step 3) of “Preparations only for the model without REC switch”
- 3) Press the PAUSE button of the adjusting remote commander
- 4) Select page: D, address: 15, and set the data memorized at step 4) of “Preparations only for the model without REC switch”
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page: 0, address: 01, and set data: 00

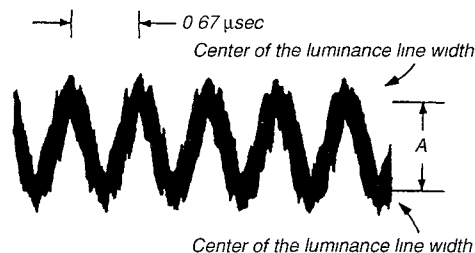


Fig. 5-3-16.

11. REC C Current Adjustment (VC-195 board)

Set the recording current levels of the REC Chroma signal. If it is too low, chroma signal noise in played back picture will increase. If too high, Y signal noises will increase and white modulation noises will be produced.

Mode	VTR recording (SP mode)
Signal	No signal
Measurement Point	Pin ⑩ of CN910 (REC RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	65
Specified Value	Hi8 model A = 34.6 ± 1 mV (NTSC) Standard8 model A = 30.9 ± 1 mV (NTSC) A = 30.0 ± 1 mV (PAL)

Note 1: NTSC Hi8 model: CCD-TRV65/ TRV65PK/ TRV85/ TRV93/ TRV615/ TRV815
NTSC Standard8 model: CCD-TRV15/ TRV15PK/ TRV25/ TRV25PK/ TRV35/ TRV215
PAL Standard8 model: CCD-TRV15E/ TRV15EP/ TRV35E

Connection:

- 1) Remove C085 (0.01μF, Pin ⑩ of IC202)

Note: After completing “REC L Level Adjustment” and “REC C Current Adjustment”, replace C085 with new parts (1-162-970-11 CERAMIC CHIP 0.01μF 10% 25V).

- 2) Connect Pin ① of IC001 and GND with a 0.01F capacitor
0.01μF capacitor: 1-101-004-00

Preparations only for the model without REC switch:

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Select page: D, address: 14, after memorizing the data, set the bit value of bit1 to “1”. (Refer to “3. Bit value discrimination” of “3-1-8. Service mode”)
- 3) Select page: D, address: 15, after memorizing the data, set the bit value of bit7 to “0”
- 4) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode

Adjusting method

- 1) Insert a tape, set to recording mode
- 2) Select page: 0, address: 01, and set data: 01.
- 3) Select page: 3, address: 01, set data: 41, and press the PAUSE button of the adjusting remote commander.
- 4) Select page: 2, address: 61, and set data: 30.
- 5) Select page: F, address: 65, change the data and set the REC chroma signal level (A) to the specified value.
- 6) Press the PAUSE button of the adjusting remote commander.
- 7) Select page: 2, address: 61, and set data: 10
- 8) Select page: 3, address: 01, set data: 00, and press the PAUSE button of the adjusting remote commander.
- 9) Select page: 0, address: 01, and set data: 00.

Processing after completed adjustment only for the model without REC switch

- 1) Select page: 0, address: 01, and set data: 01
- 2) Select page: D, address: 14, and set the data memorized at step 3) of “Preparations only for the model without REC switch”
- 3) Press the PAUSE button of the adjusting remote commander
- 4) Select page: D, address: 15, and set the data memorized at step 4) of “Preparations only for the model without REC switch”
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page: 0, address: 01, and set data: 00.

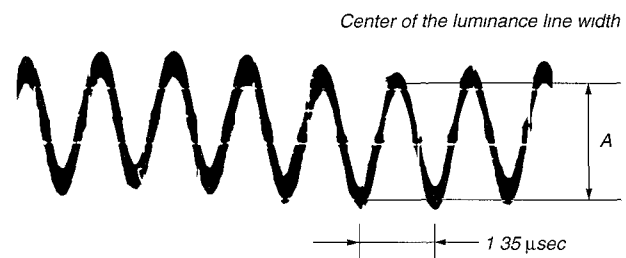


Fig. 5-3-17.

3-5. IR TRANSMITTER ADJUSTMENTS (CCD-TRV35/ TRV65/ TRV65PK/ TRV85/ TRV93/ TRV615/TRV815)

Adjust using a IR receiver jig (J-6082-383-A)

Switch setting

LASER LINK . . . (Red LED is lit)

1. IR Video Carrier Frequency Adjustment (VC-195 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	Pin ⑤ of CN003 of IR receiver jig (RF) (Or Pin ⑩ of IC751 of VC-195 board)
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	68
Specified Value	$f = 11\ 85 \pm 0.05 \text{MHz}$

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust

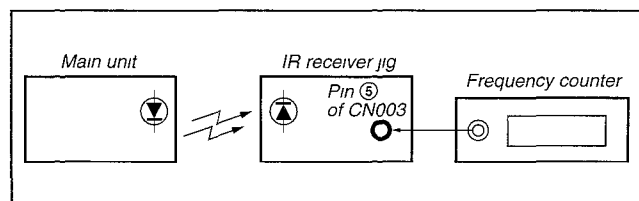


Fig. 5-3-18.

Adjusting method

- 1) Select page. 0, address: 01, and set data 01
- 2) Select page 3, address 01, set data 37, and press the PAUSE button of the adjusting remote commander
- 3) Select page. F, address 68, change the data, and set the video carrier frequency (f) to the specified value
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 6) Select page 0, address: 01, and set data: 00

2. IR Video Deviation Adjustment (VC-195 board)

Mode	Camera standby
Subject	Arbitrary
Measurement Point	VIDEO OUT terminal of IR receiver jig (Terminated at 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	66
Specified Value	$A = 0\ 87 \pm 0.04 \text{V}$

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust

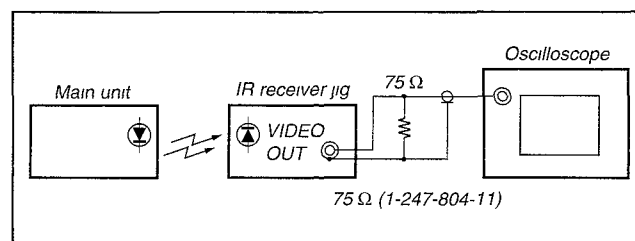


Fig. 5-3-19.

Adjusting method

- 1) Select page 0, address: 01, and set data 01
- 2) Select page 3, address 01, set data 39, and press the PAUSE button of the adjusting remote commander
- 3) Select page F, address 66, and change the data, set the video signal amplitude (A) to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander
- 5) Select page 3, address 01, set data 00, and press the PAUSE button of the adjusting remote commander
- 6) Select page 0, address 01, and set data 00

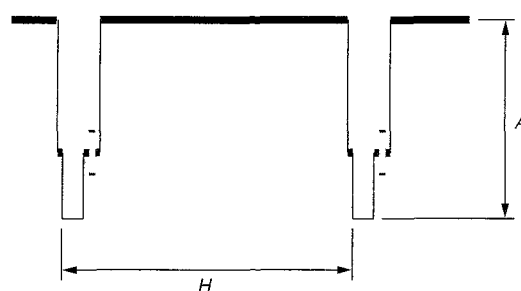


Fig. 5-3-20.

3. IR Audio Deviation Adjustment (VC-195 board)

Mode	VTR recording
Signal	Audio signal 400Hz, -7.5dBs L or R of AUDIO terminal Video signal Color bar signal : VIDEO terminal
Measurement Point	AUDIO L terminal and AUDIO R terminal of IR receiver jig (Terminated at 47k Ω)
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	67
Specified Value	Signal level -7.5 $\pm$ 2.0dBs

Connection of Equipment

Connect the measuring device as shown in the following figure, and adjust

Preparations only for the model without REC switch

- 1) Select page 0, address: 01, and set data 01
- 2) Select page D, address 14, after memorizing the data, set the bit value of bit1 to "1". (Refer to "3. Bit value discrimination" of "3-1-8 Service mode").
- 3) Select page D, address: 15, after memorizing the data , set the bit value of bit7 to "0"
- 4) Turn off the HOLD switch of the adjusting remote commander, and press the REC buttons and set to recording mode.

Adjusting method

- 1) Select page: 0, address: 01, and set data: 01.
- 2) Connect the audio level meter to the AUDIO L terminal of the IR receiver jig
- 3) Select page F, address: 67, change the data and set the 400Hz audio signal level to the specified value.
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Connect the audio level meter to the AUDIO R terminal of the IR receiver jig.
- 6) Check that the 400Hz audio signal level is within the specified value. If outside, repeat from step 2)
- 7) Select page: 0, address: 01, and set data: 00

Processing after completed adjustment: only for the model without REC switch

- 1) Select page 0, address: 01, and set data: 01
- 2) Select page D, address: 14, and set the data memorized at step 3) of "Preparations only for the model without REC switch".
- 3) Press the PAUSE button of the adjusting remote commander.
- 4) Select page. D, address 15, and set the data memorized at step 4) of "Preparations only for the model without REC switch".
- 5) Press the PAUSE button of the adjusting remote commander
- 6) Select page 0, address: 01, and set data: 00

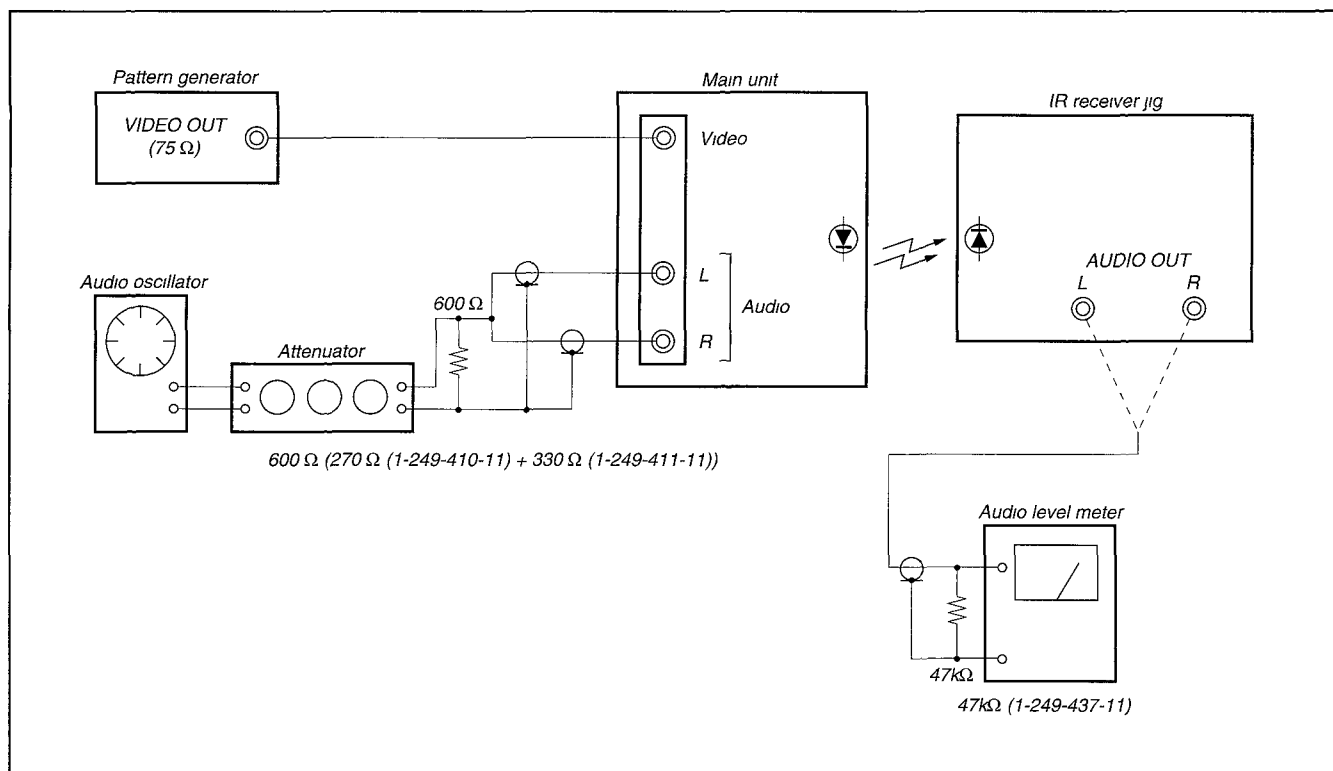


Fig. 5-3-21.

3-6. STEREO AUDIO SYSTEM ADJUSTMENT (CCD-TRV65/TRV65PK/TRV85/TRV93/TRV615/ TRV815)

- Perform the adjustment using the color bar signal as a video signal input for VIDEO terminal
- The items to be adjusted for the R channel will be indicated within the [], in regard to the adjusting items to be adjusted for both L and R channels.
- Set the Hi-Fi sound switch in the menu display to "STEREO" position unless specified otherwise

Note:

- 1) When inputting the audio signal, input the same signal to both the L and R channels, unless specified otherwise
 - 2) Be sure to insert the plug (Shorting plug or dummy plug, etc) into the AUDIO terminal (Right). If the plug is not inserted, the monaural mode will be set, and correct adjustments can not be carried out
[Monaural mode]
- During recording REC AFM RF 1.7MHz carrier will not be output.
- During playback The L+R signal will be output from the AUDIO terminal (Left)

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments in addition to the video system measuring instruments as shown in Fig. 5-3-22, and perform adjustments at the power switch [VTR] or [PLAYER] position

[Adjustment Procedure]

- 1) 1.5 MHz deviation adjustment
- 2) 1.7 MHz deviation adjustment
- 3) BPF adjustment

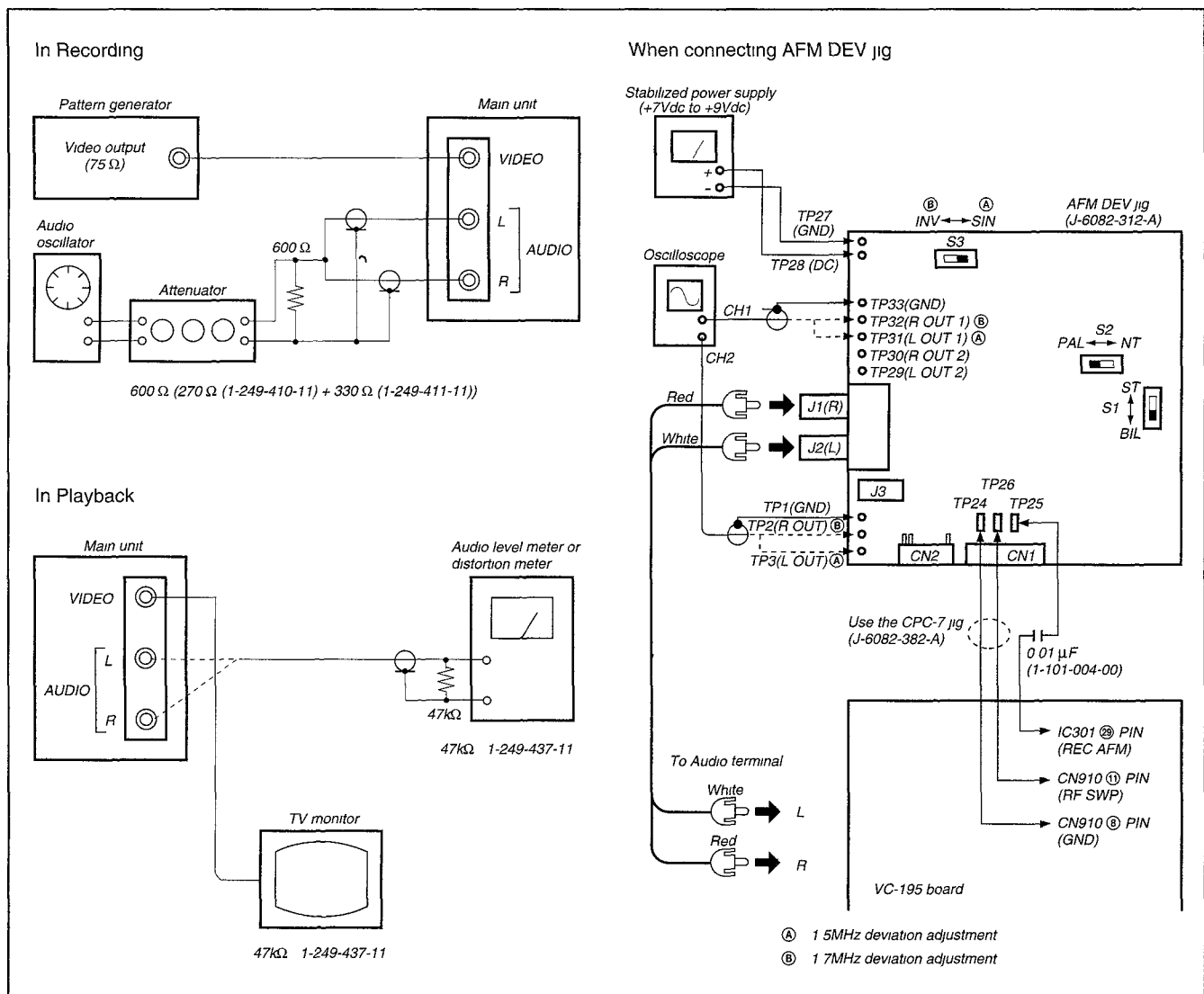


Fig. 5-3-22.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the L-ch ((L+R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP31 CH2: AFM DEV jig TP3
Measuring Instrument	Oscilloscope ADD mode CH2 INV mode
Adjustment Page	F
Adjustment Address	45
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

- 1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
TP24(GND) Pin ⑧ of CN910
TP26(RF SWP) Pin ⑪ of CN910
- 2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ⑳ of IC301 with a 0.01 μ F capacitor (1-101-004-00).
- 3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
- 4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
- 5) Set the AFM DEV jig switches to the following positions.
S1 BIL Position
S2 NT Position
S3 SIN Position

Adjusting method :

- 1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
- 2) Set the oscilloscope to the ADD mode and CH2 to the INV (invert) mode.
- 3) Select page: 0, address: 01, and set data: 01.
- 4) Select page: F, address: 45, change the data and minimize the audio signal level difference (A).
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

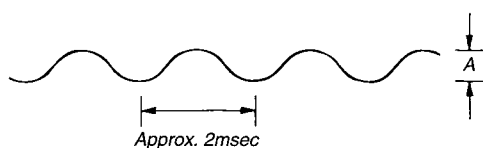


Fig. 5-3-23.

2. 1.7 MHz Deviation Adjustment (VC-195 board)

Sets the spectrum of the R-ch ((L-R)/2 signal) level modulated during recording. If deviated, the crosstalk signal of the audio signal will occur and the audio level will drop during both playback and recording.

Mode	VTR recording
Signal	Input the AFM DEV jig output signal to the left and right audio input terminal
Measurement Point	CH1: AFM DEV jig TP32 CH2: AFM DEV jig TP2
Measuring Instrument	Oscilloscope ADD mode CH2 normal mode
Adjustment Page	F
Adjustment Address	46
Specified Value	The level difference between CH1 signal and CH2 signal should be minimum.

Connection:

- 1) Connect TP24 and TP26 of the AFM DEV jig to CN910 of the VC-195 board.
TP24 (GND) Pin ⑧ of CN910
TP26 (RF SWP) Pin ⑪ of CN910
- 2) Connect TP25 (REC AFM) of the AFM DEV jig to Pin ⑳ of IC301 with a 0.01 μ F capacitor (1-101-004-00).
- 3) Connect the audio output terminal (J1 and J2) of the AFM DEV jig to AUDIO terminal of the unit.
- 4) Connect TP28 (DC), TP27 (GND) of the AFM DEV jig to the DC power supply (+7Vdc to +9Vdc).
- 5) Set the AFM DEV jig switches to the following positions.
S1 BIL Position
S2 NT Position
S3 INV Position

Adjusting method :

- 1) Match the vertical ranges of CH1 and CH2 of the oscilloscope to each other.
- 2) Set the oscilloscope to the ADD mode and CH2 to the normal mode.
- 3) Select page: 0, address: 01, and set data: 01.
- 4) Select page: F, address: 46, change the data and minimize the audio signal level difference (A).
- 5) Press the PAUSE button of the adjusting remote commander.
- 6) Select page: 0, address: 01, and set data: 00.

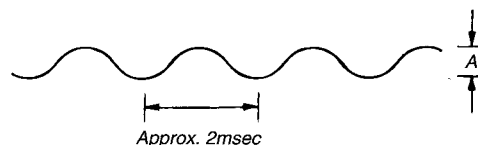


Fig. 5-3-24.

3. BPF f0 Adjustment (VC-195 board)

Sets the BPF passing frequency so that the AFM signal can separate from the playback RF signal properly. If deviated the mono/stereo mode will be differentiated incorrectly, and noises and distortions will increase during high volume playback

Mode	Playback
Signal	Alignment tape For BPF adjustment (WR5-11NS)
Measurement Point	Audio output terminal left or right
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The Main and Sub channel distortion rate should be almost the same (within $\pm 1\%$) and minimum

Adjusting method

- 1) Select page: 0, address: 01, and set data: 01
- 2) Set the Hi-Fi sound switch (menu display) to "2".
- 3) Select page: F, address: 47, change the data and minimize the distortion rate
- 4) Press the PAUSE button of the adjusting remote commander.
- 5) Set the Hi-Fi sound switch (menu display) to "1"
- 6) Select page F, address: 47, change the data and minimize the distortion rate
- 7) Press the PAUSE button of the adjusting remote commander
- 8) Repeat steps 2) to 7) and set the data of address: 47 so that the distortions rates when the Hi-Fi sound switch is set to "2" and set to "1" respectively are almost the same and minimum.
- 9) Press the PAUSE button of the adjusting remote commander.
- 11) Select page: 0, address: 01, and set data: 00
- 12) Set the Hi-Fi sound switch to "STEREO"

3-7. MONAURAL AUDIO SYSTEM ADJUSTMENT MONAURAL (CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/ TRV25PK/TRV35/TRV35E/TRV215)

[Connecting the measuring instruments for the audio]

Connect the audio system measuring instruments besides the video system measuring instruments as shown Fig 5-3-25

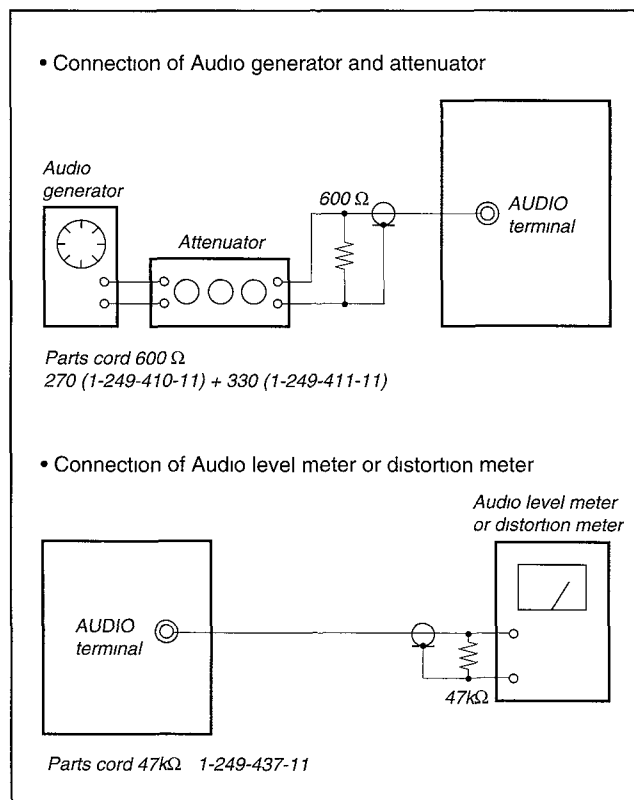


Fig. 5-3-25.

1. 1.5 MHz Deviation Adjustment (VC-195 board)

Adjust to the optimum audio FM signal distortion

If the adjustment is not correct, its playback level will differ from that of other units.

Mode	Playback
Signal	Alignment tape. For checking the operation (WR5-5NSP (NTSC)) (WR5-5CSP (PAL))
Measurement Point	Audio output terminal
Measuring Instrument	Audio level meter
Adjustment Page	F
Adjustment Address	45
Specified Value	-7.5±0.5dBs

Note 1: NTSC model CCD-TRV15/ TRV15PK/ TRV25/
TRV25PK/ TRV35/ TRV215
PAL model: CCD-TRV15E/ TRV15EP/ TRV35E

Adjusting method

- 1) Select page. 0, address: 01, and set data 01
- 2) Select page. F, address 45, change the data and set the 400Hz signal level to the specified value.
- 3) Press the PAUSE button of the adjusting remote commander
- 4) Select page: 0, address 01, and set data 00

2. BPF Adjustment (VC-195 board)

Adjust to the optimum audio BPF characteristics of the IC

If the adjustment is not correct, the distortion rate and S/N ratio will worsen

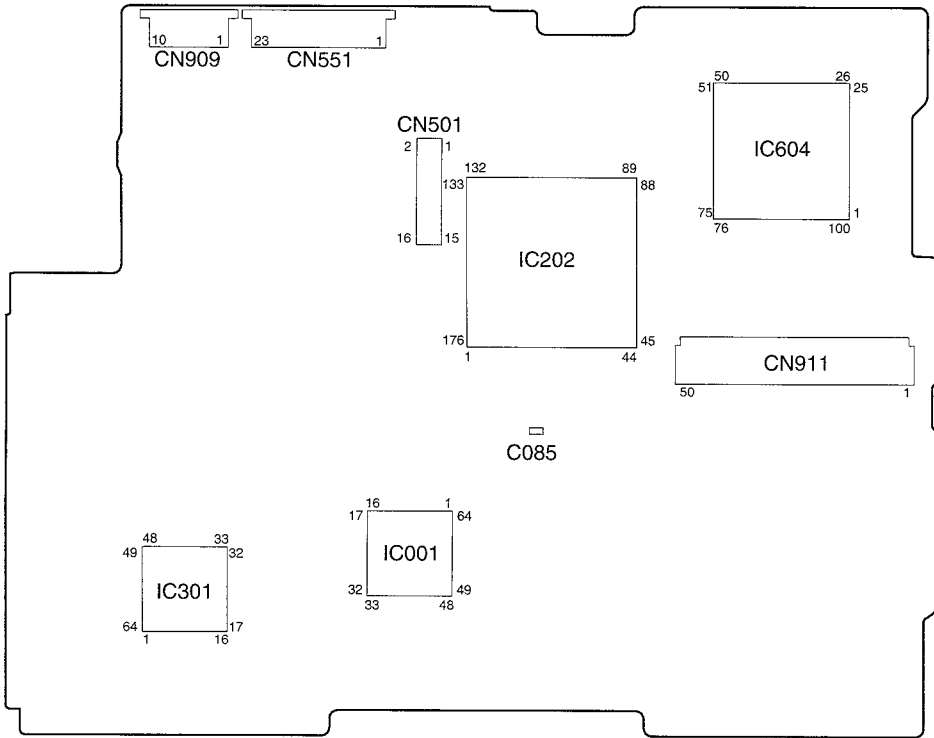
Mode	Playback
Signal	Alignment tape. For BPF adjustment (WR5-11NS (NTSC)) (WR5-11CS (PAL))
Measurement Point	Audio output terminal
Measuring Instrument	distortion meter
Adjustment Page	F
Adjustment Address	47
Specified Value	The distortion rate should be and minimum

Adjusting method :

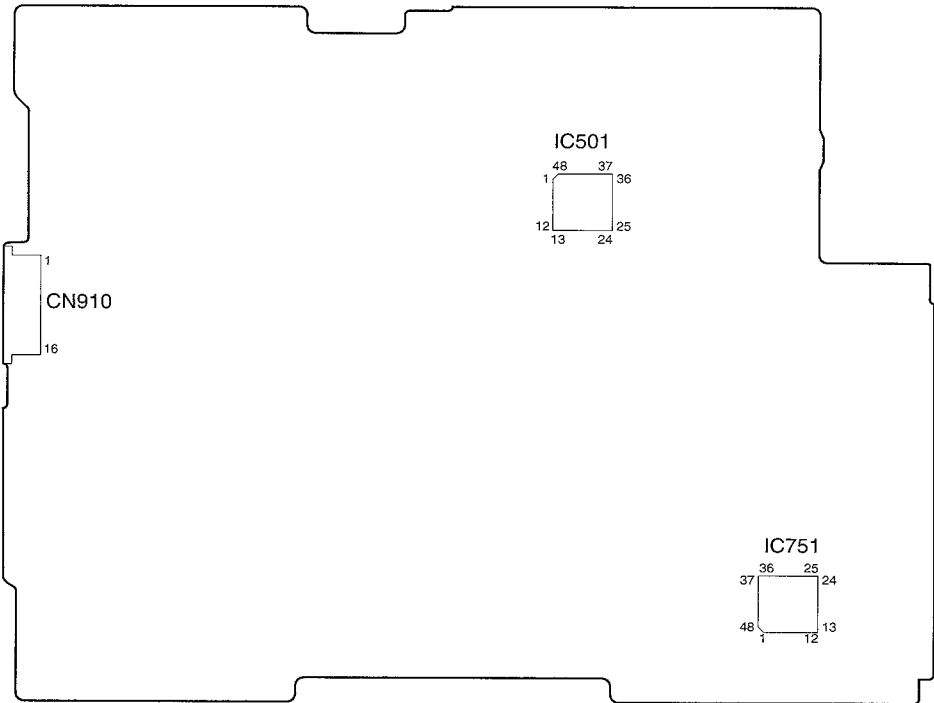
- 1) Select page: 0, address 01, and set data 01
- 2) Select page F, address 47, change the data and minimize the distortion rate
- 3) Press the PAUSE button of the adjusting remote commander
- 4) Select page 0, address 01, and set data 00

3-8. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-195 BOARD (SIDE A)



VC-195 BOARD (SIDE B)



CCD-TRV15/TRV15E/TRV15EP/TRV15PK/TRV25/TRV25PK/TRV35/TRV35E/ TRV65/TRV65PK/TRV85/TRV93/TRV215/TRV615/TRV815

SECTION 6 REPAIR PARTS LIST

6-1. EXPLODED VIEWS

NOTE

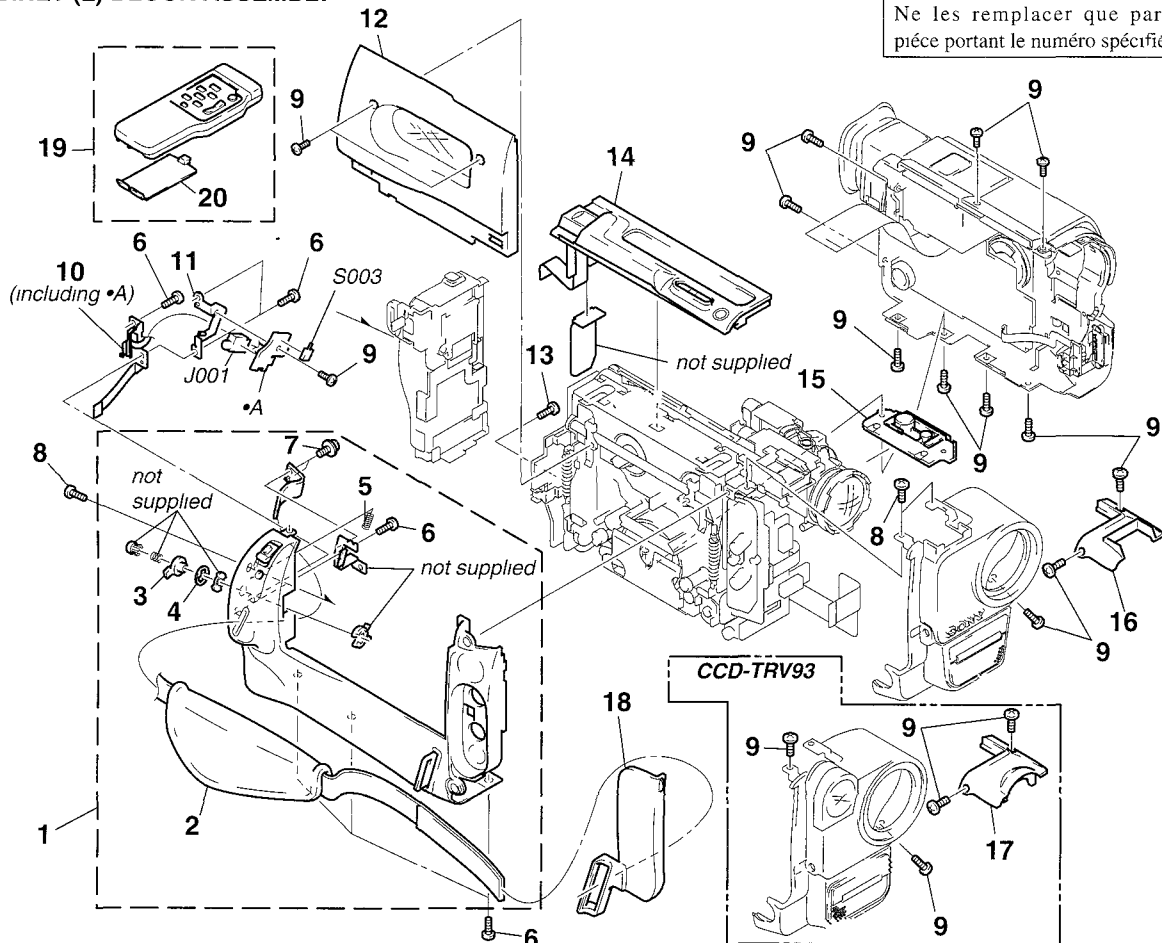
- Items marked “ ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

- Abbreviation
Canadian model is abbreviated as CND
Chinese model is abbreviated as CN
Brazilian model is abbreviated as BR
East European model is abbreviated as EE
Hong Kong model is abbreviated as HK
North European model is abbreviated as NE
Russian model is abbreviated as RU

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

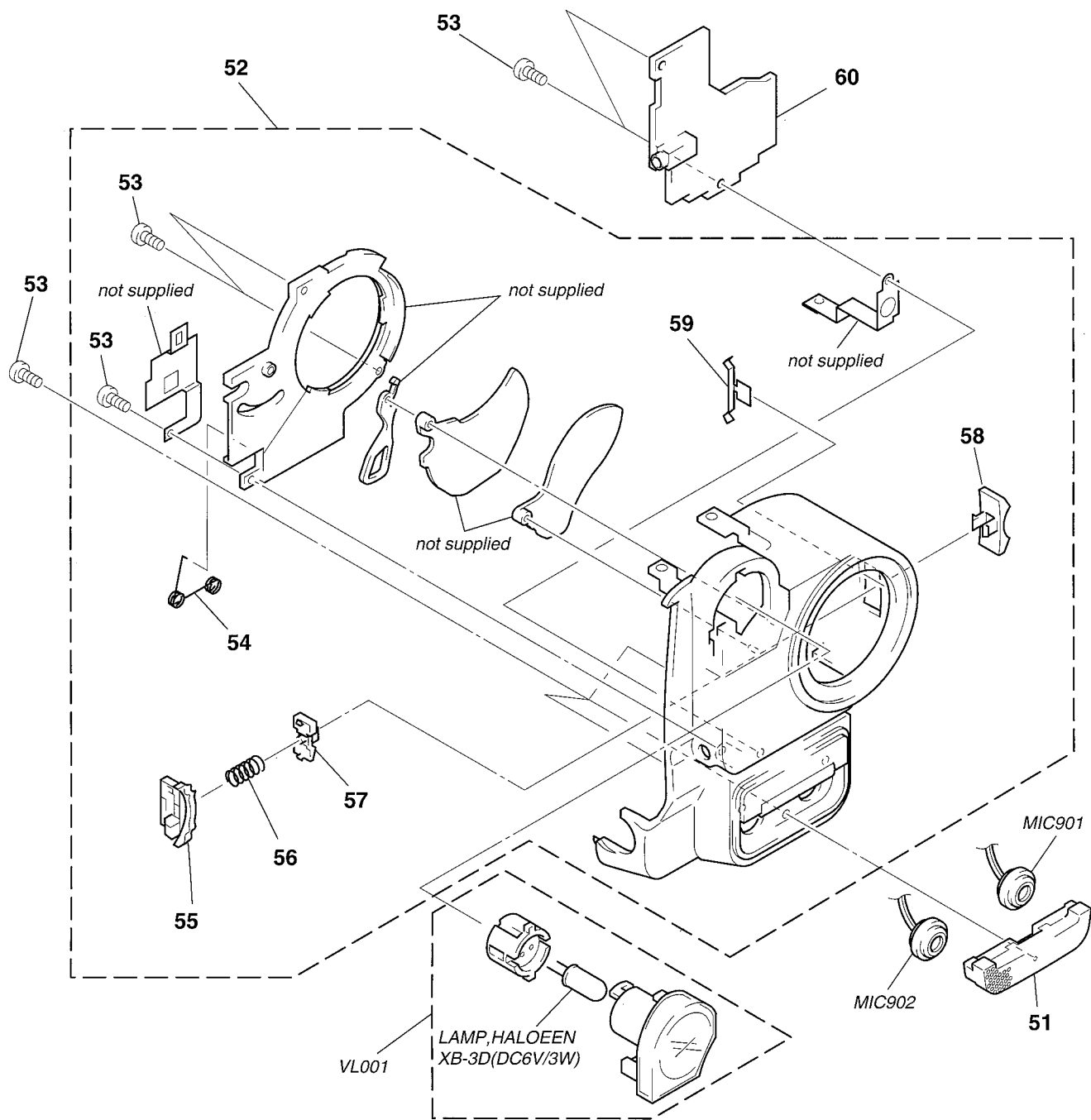
Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

6-1-1. CABINET (L) BLOCK ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	X-3948-205-1	CABINET (L) ASSY (TRV65/TRV65PK/TRV615)		13	3-713-786-21	SCREW (M2X3)	
1	X-3948-207-1	CABINET (L) ASSY (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		14	1-475-617-11	SWITCH BLOCK, CONTROL(FK-8500) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
1	X-3948-315-1	CABINET (L) ASSY (TRV85/TRV815/TRV93)		14	1-475-617-31	SWITCH BLOCK, CONTROL (FK-8500)(TRV35E)	
2	3-969-339-31	BELT, GRIP		14	1-475-617-51	SWITCH BLOCK, CONTROL(FK-8500)(TRV35)	
3	3-969-081-01	KNOB, STAND-BY		14	1-475-617-71	SWITCH BLOCK, CONTROL(FK-8500) (TRV65/TRV65PK/TRV615)	
4	3-970-854-01	SPRING, STAND-BY		14	1-475-618-41	SWITCH BLOCK, CONTROL(FK-8500) (TRV85/TRV815/TRV93)	
5	3-302-492-00	SPRING, COMPRESSION		15	3-987-717-01	SCREW, TRIPOD	
6	3-948-339-61	TAPPING		16	3-987-639-11	CABINET (S) (878)(TRV85/TRV815)	
7	3-679-362-11	SCREW		16	3-987-639-01	CABINET (S (870)) (TRV35/TRV65/TRV65PK/TRV615/TRV35E)	
8	3-962-826-01	SCREW (2X4)		17	3-987-645-01	CABINET (N) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
9	3-968-729-01	SCREW (M2), LOCK ACE, P2		17	3-987-652-11	CABINET (LT)(TRV93)	
10	1-475-619-11	SWITCH BLOCK, CONTROL(SS-8500)		18	3-975-522-01	COVER, JACK	
11	3-975-532-01	HOLDER, EL		19	1-467-574-21	REMOTE COMMANDER (RMT-708)	
12	X-3947-199-1	LID ASSY, CASSETTE (TRV85/TRV815/TRV93)		20	3-958-131-01	LID, BATTERY CASE (for RMT-708)	
12	X-3948-219-1	LID ASSY, CASSETTE (TRV65/TRV65PK/TRV615)		J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANG)	
12	X-3948-221-1	LID ASSY, CASSETTE (TRV15 US,CND/TRV25/TRV215)		S003	1-572-688-11	SWITCH, PUSH (1 KEY) (EJECT)	
12	X-3948-223-1	LID ASSY, CASSETTE (TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35 E,HK/TRV15E/TRV35E)					

6-1-2. FRONT PANEL BLOCK ASSEMBLY (TRV93)



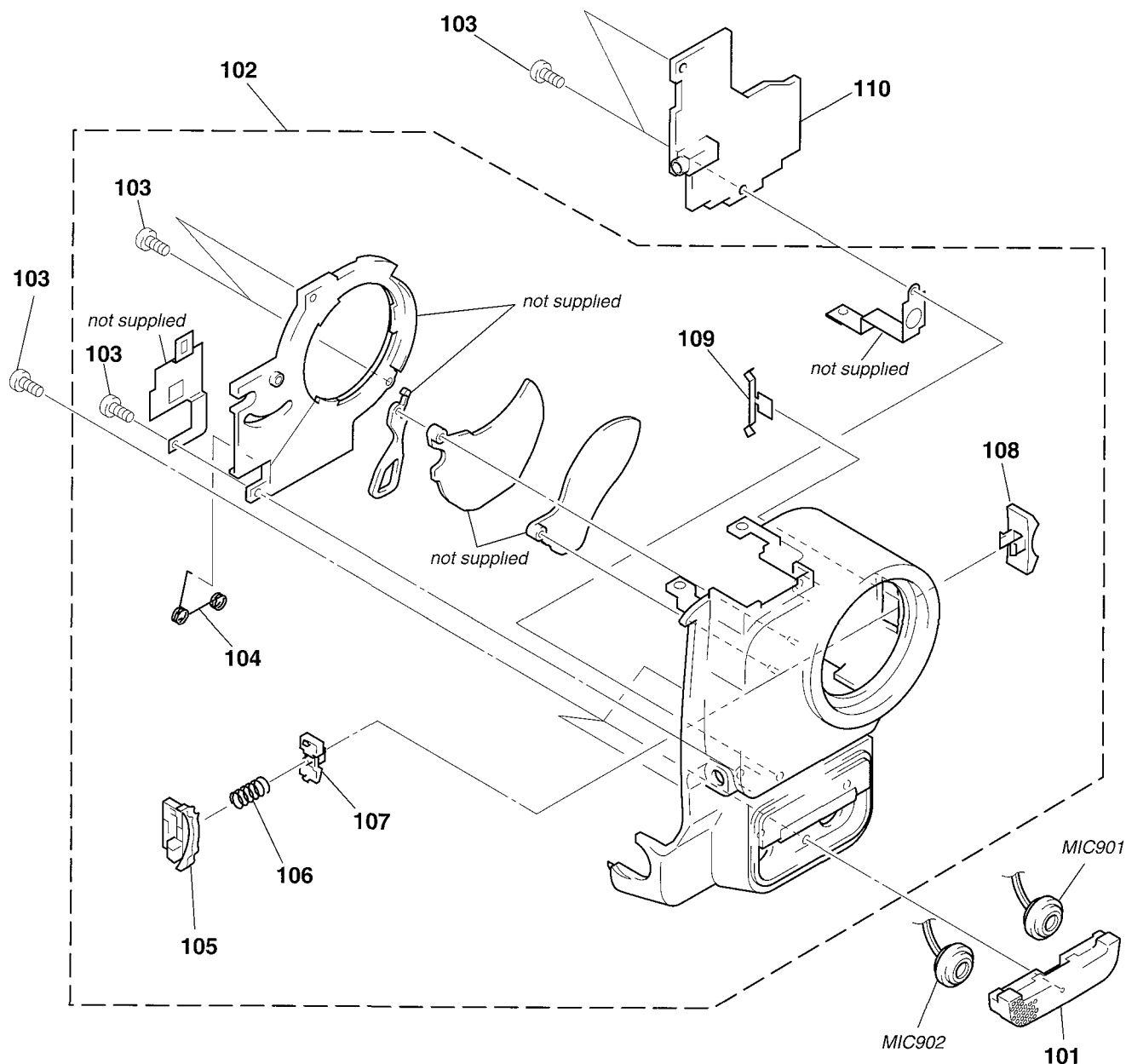
The components identified by mark Δ or dotted line with mark Δ are critical for safety. /
Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifié.

Ref. No.	Part No.	Description	Remark
51	X-3948-170-1	GRILLE (870) ASSY, MICROPHONE	
52	X-3948-276-1	PANEL (887) ASSY, FRONT	
53	3-948-339-61	TAPPING	
54	3-987-882-01	SPRING, TORSION	
55	3-987-632-01	HOLDER, P KNOB	

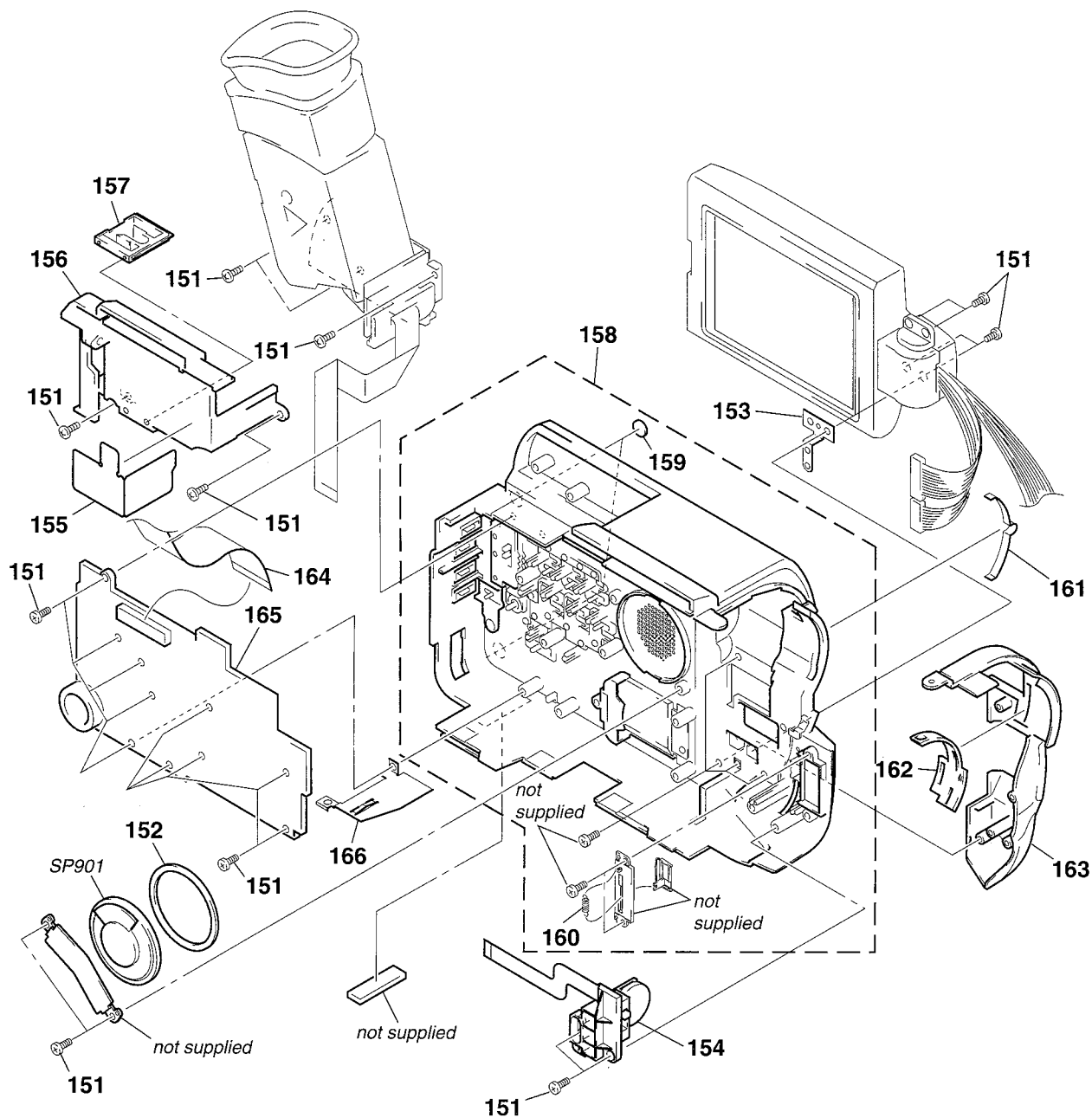
Ref. No.	Part No.	Description	Remark
56	3-973-619-01	SPRING, COMPRESSION	
57	3-987-633-01	BUTTON, LOCK	
58	3-987-631-01	KNOB, P	
59	3-987-642-01	SPRING, CLICK	
60	A-7073-455-A	MA-312(VHIB) BOARD, COMPLETE	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH)	
Δ VL001	1-517-760-11	LIGHT BLOCK, VIDEO	

6-1-3. FRONT PANEL BLOCK ASSEMBLY (EXCEPT TRV93)



Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
101	X-3948-170-1	GRILLE (870) ASSY, MICROPHONE		107	3-987-633-01	BUTTON, LOCK	
102	X-3948-194-1	PANEL (870) ASSY, FRONT (TRV15/TRV15PK/TRV15E/TRV15EP)		108	3-987-631-01	KNOB, P	
102	X-3948-196-1	PANEL (870) ASSY, FRONT (TRV35)		109	3-987-642-01	SPRING, CLICK	
102	X-3948-197-1	PANEL (870) ASSY, FRONT (TRV35E)		110	A-7073-402-A	MA-331(VMM) BOARD, COMPLETE (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
102	X-3948-274-1	PANEL (870) ASSY, FRONT (TRV65/TRV65PK/TRV615)		110	A-7073-411-A	MA-331(VHI) BOARD, COMPLETE (TRV65/TRV65PK/TRV615)	
102	X-3948-479-1	PANEL (870) ASSY, FRONT (TRV25/TRV25PK/TRV215)		110	A-7073-430-A	MA-312(VHI) BOARD, COMPLETE (TRV85/TRV815)	
102	X-3948-275-1	PANEL (887) ASSY, FRONT (TRV85/TRV815)		110	A-7073-445-A	MA-311(VMMI) BOARD, COMPLETE (TRV35)	
103	3-948-339-61	TAPPING		110	A-7073-451-A	MA-331(VMM0) BOARD, COMPLETE (TRV35E)	
104	3-987-882-01	SPRING, TORSION		MIC901	1-542-312-11	MICROPHONE (L-CH)	
105	3-987-632-01	HOLDER, P KNOB		MIC902	1-542-312-11	MICROPHONE (R-CH) (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
106	3-973-619-01	SPRING, COMPRESSION					

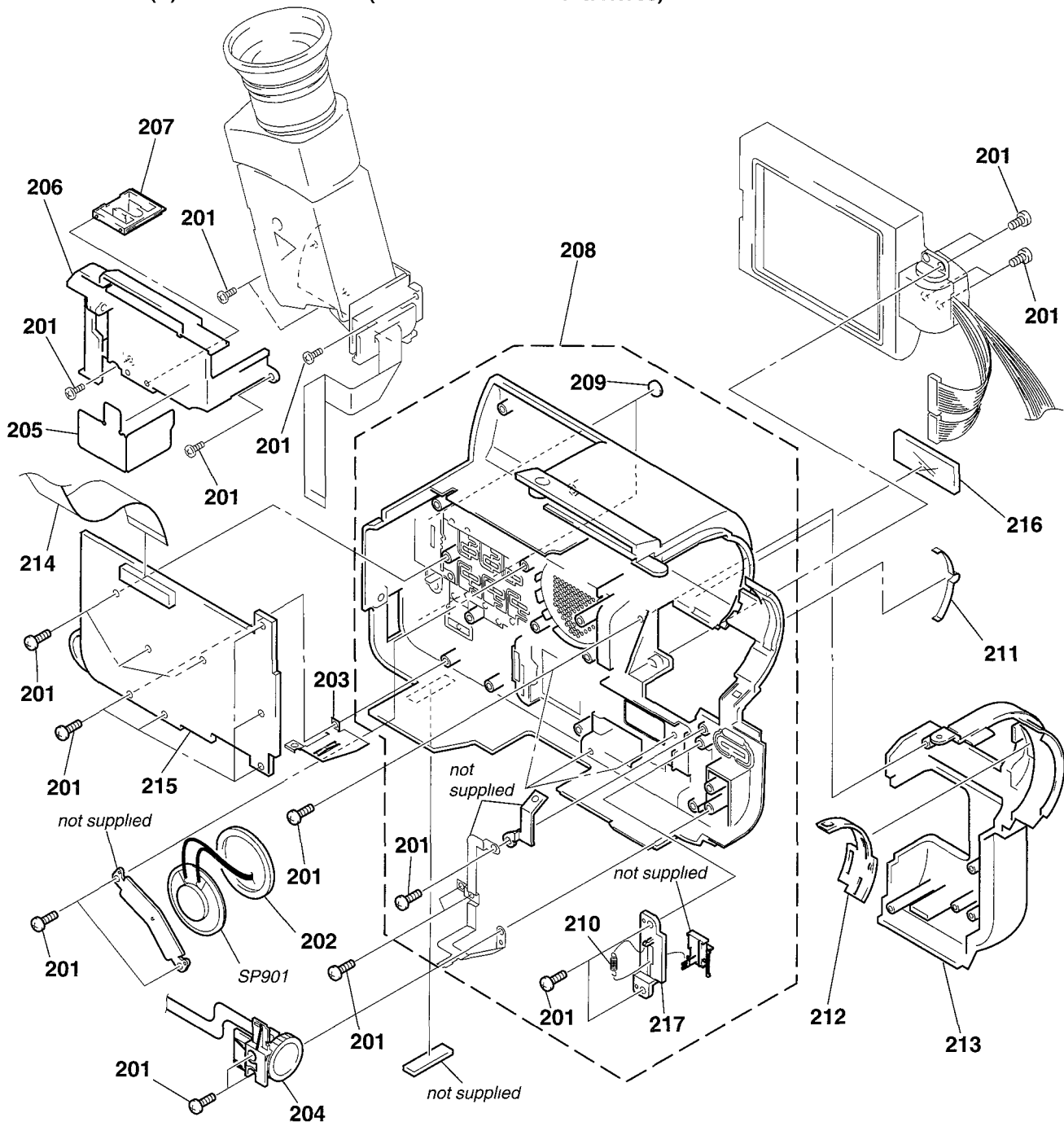
6-1-4. CABINET (R) BLOCK ASSEMBLY (TRV85/TRV815/TRV93)



Ref. No.	Part No.	Description	Remark
151	3-948-339-61	TAPPING	
152	3-965-367-01	SPACER, SP	
153	3-987-769-01	PLATE, HINGE GROUND	
154	1-475-621-11	SWITCH BLOCK, CONTROL(MR-8500)	
* 155	3-987-842-01	SHEET, VF FLEXIBLE RETAINE	
156	3-987-792-01	BASE (887), VF	
157	3-987-783-01	LOCK, TILT	
158	X-3948-267-1	CABINET (R) (887) ASSY	
159	3-959-978-02	CUSHION, PANEL	
160	3-989-121-01	SPRING, TENSION	

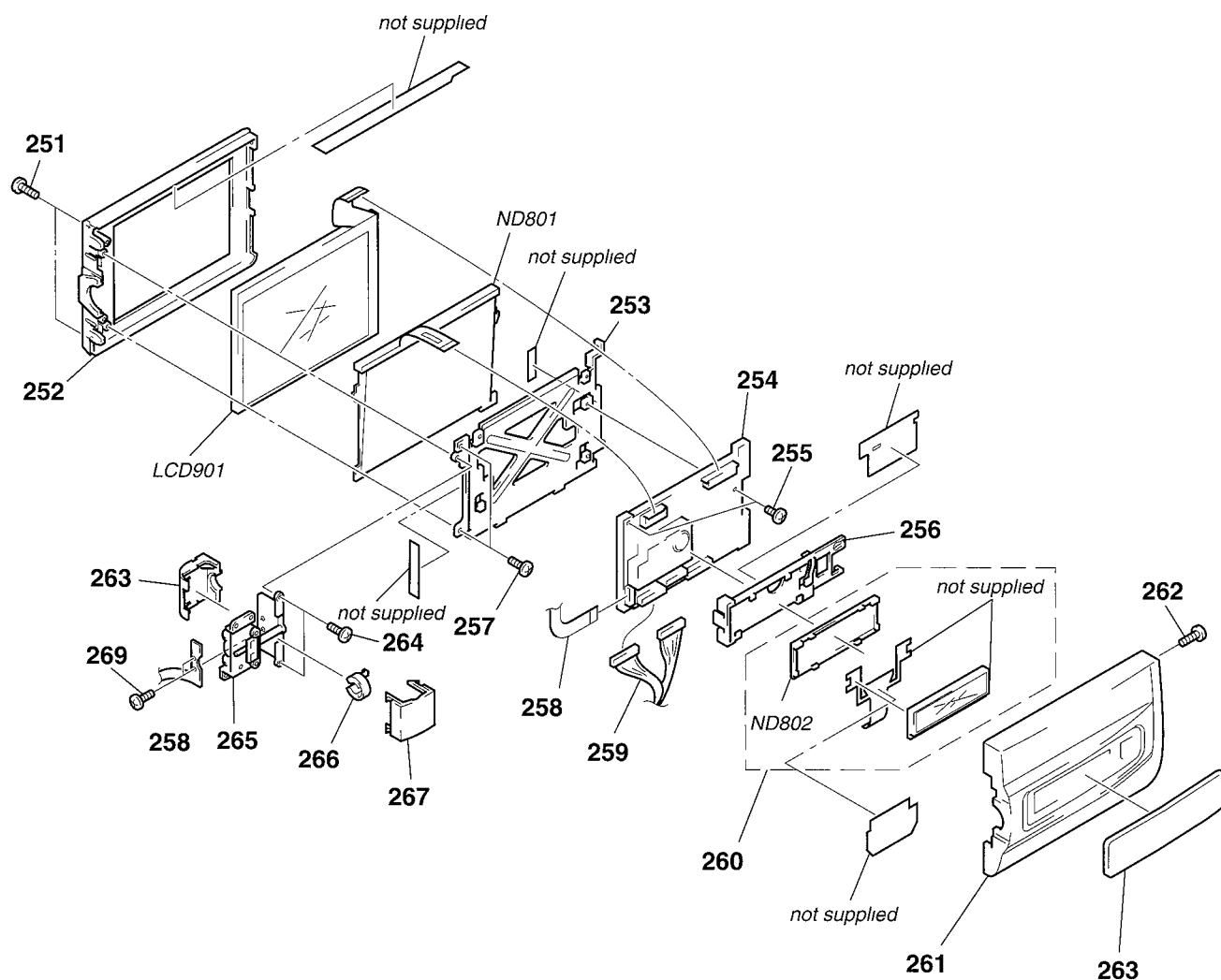
Ref. No.	Part No.	Description	Remark
161	3-987-739-01	SPRING, LINK PLATE	
162	3-987-744-01	KNOB, IR	
163	3-987-764-01	COVER, IR	
164	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
165	A-7073-431-A	CF-51(VH) BOARD, COMPLETE	(TRV85/TRV815)
165	A-7073-456-A	CF-51(VHC) BOARD, COMPLETE	(TRV93)
166	3-987-770-01	PLATE (887), GROUND	
SP901	1-504-753-21	SPEAKER (2.8CM)	

6-1-5. CABINET (R) BLOCK ASSEMBLY (EXCEPT TRV85/TRV815/TRV93)



Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
201	3-948-339-61	TAPPING		212	3-987-744-01	KNOB, IR	
202	3-965-367-01	SPACER, SP		213	3-987-730-01	COVER, IR (TRV65/TRV65PK)	
203	3-987-742-01	PLATE (878), GROUND		213	3-987-730-11	COVER, IR	
204	1-475-620-11	SWITCH BLOCK, CONTROL (MF-8500)		213	3-987-730-21	COVER, IR (TRV35/TRV35E)	
* 205	3-987-842-01	SHEET, VF FLEXIBLE RETAINER		213	3-987-730-31	COVER, IR (TRV615)	
206	X-3948-603-1	BASE, VF ASSY		214	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
207	3-987-783-01	LOCK, TILT		215	A-7073-403-A	CF-50(E7V) BOARD, COMPLETE	
208	X-3948-239-1	CABINET (R) (878) ASSY		215	A-7073-412-A	CF-50(ESV) BOARD, COMPLETE	
208	X-3948-240-1	CABINET (R) (846U) ASSY		216	3-987-729-01	PLATE, ORNAMENTAL (TRV65/TRV65PK)	
208	X-3948-241-1	CABINET (R) (872) ASSY (TRV35E AEP, UK)		216	3-987-729-11	PLATE, ORNAMENTAL	
208	X-3948-242-1	CABINET (R) (871) ASSY		216	3-987-729-21	PLATE, ORNAMENTAL	
208	X-3948-246-1	CABINET (R) (846E) ASSY		216	3-987-729-41	PLATE, ORNAMENTAL (TRV615)	
209	3-959-978-21	CUSHION, PANEL (EXCEPT TRV35E/TRV65PK)		216	3-987-729-51	PLATE, ORNAMENTAL (TRV215)	
210	3-987-742-01	SPRING, TENSION		217	3-987-736-01	LID, MK	
211	3-987-739-01	SPRING, LINK PLATE		SP901	1-505-291-11	SPEAKER (DIA 2 8CM)	

6-1-6. LCD BLOCK ASSEMBLY(3/3.5INCH) (TRV85/TRV815/TRV93)

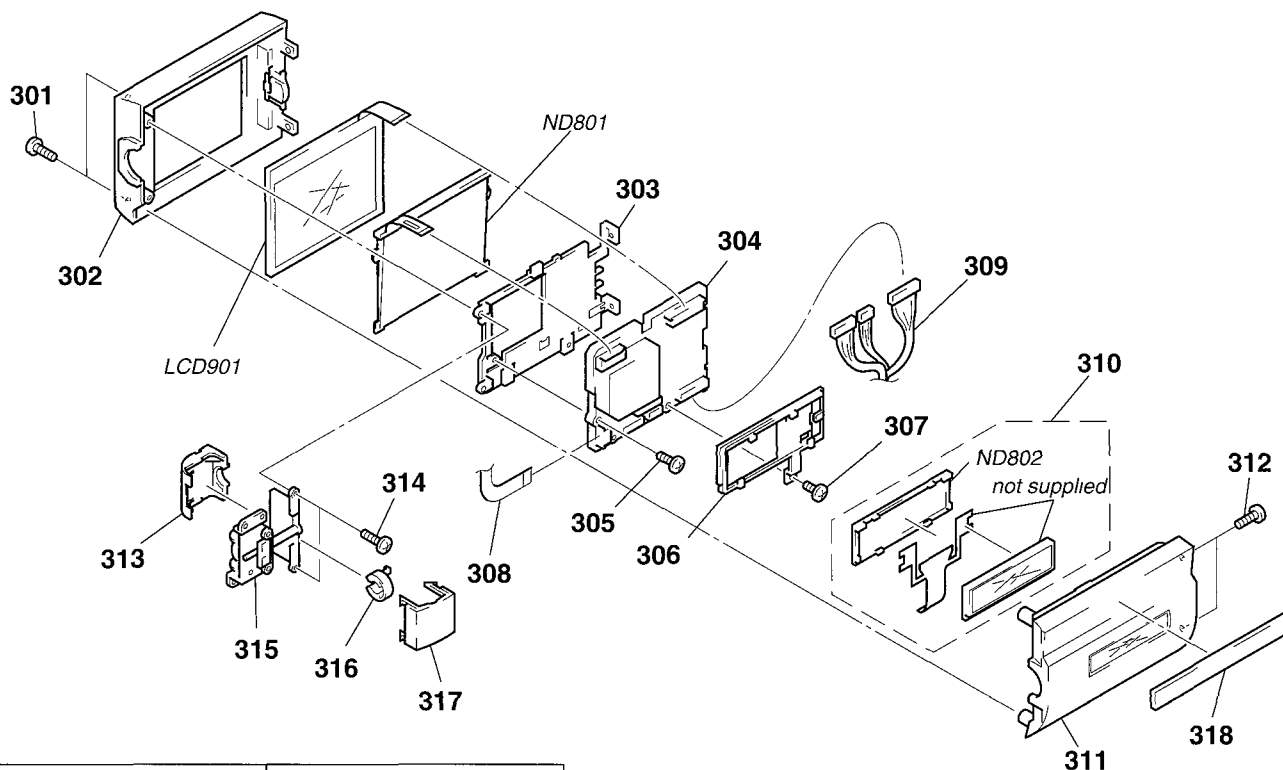


The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque $\triangle$ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
251	3-948-339-11	SCREW, TAPPING		263	3-987-601-11	WINDOW (885), LCD (TRV93)	
252	3-987-593-01	CABINET (M) (885), P (TRV85/TRV815)		263	3-987-601-51	WINDOW (885), LCD (TRV815)	
252	3-987-593-11	CABINET (M) (885), P (TRV93)		264	3-948-339-01	SCREW, TAPPING	
253	3-987-594-01	FRAME (885), PANEL		265	X-3948-169-1	HINGE ASSY	
254	A-7073-432-A	PD-93(CN3 5) BOARD, COMPLETE (TRV85/TRV815)		266	3-987-623-01	CLAMP, HARNESS	
254	A-7073-457-A	PD-93(SN3) BOARD, COMPLETE (TRV93)		267	3-987-626-01	COVER (C) (885), HINGE	
255	3-713-786-21	SCREW (M2X3)		268	3-987-625-11	COVER (M), HINGE	
256	3-987-597-01	HOLDER (885), LCD		269	4-981-286-01	SCREW(M1 7x2), IB LOCK	
257	3-948-339-61	TAPPING		LCD901	1-803-032-21	INDICATOR MODULE, LIQUID CRYST (TRV85/TRV815)	
258	1-668-963-41	FP-642 FLEXIBLE BOARD		LCD901	1-803-037-21	INDICATOR MODULE, LIQUID CRYST (TRV93)	
259	1-958-332-11	HARNESS (DP-71)		$\triangle$ ND801	1-517-753-11	TUBE, FLUORESCENT,COLD CATHODE (TRV93)	
260	A-7093-486-A	INDICATION LCD BLOCK ASSY		$\triangle$ ND801	1-517-754-11	TUBE, FLUORESCENT,COLD CATHODE (TRV85/TRV815)	
261	X-3948-165-1	CABINET (C) (885) H ASSY, P		$\triangle$ ND802	1-517-759-11	LIGHT, BACK	
262	3-962-826-01	SCREW (2X4)					
263	3-987-601-01	WINDOW (885), LCD (TRV85)					

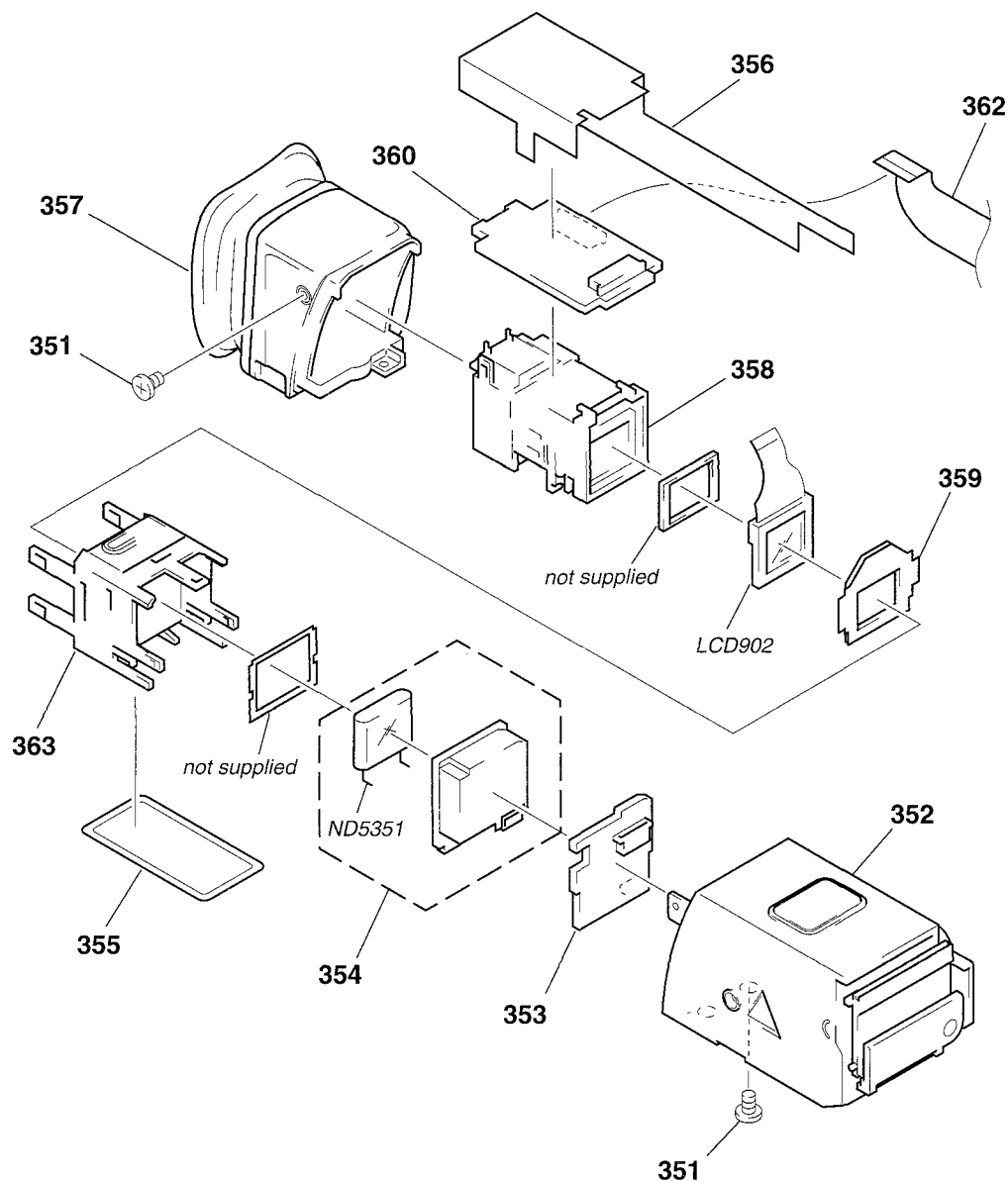
6-1-7. LCD BLOCK ASSEMBLY (2.5INCH)(EXCEPT TRV85/TRV815/TRV93)



The components identified by mark Δ or dotted line with mark Δ are critical for safety Replace only with part number specified	Les composants identifiés par une marque Δ sont critiques pour la sécurité Ne les remplacer que par une pièce portant le numéro spécifié
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Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
301	3-948-339-11	SCREW, TAPPING		313	3-987-625-01	COVER (M), HINGE	
302	X-3948-162-1	CABINET (M) (870) ASSY, P		314	3-948-339-01	SCREW, TAPPING	
303	3-987-582-01	FRAME (870), PANEL		315	X-3948-169-1	HINGE ASSY	
304	A-7073-413-A	PD-92(SN6) BOARD, COMPLETE (TRV35/TRV65/TRV65PK/TRV615)		316	3-987-623-01	CLAMP, HARNESS	
304	A-7073-415-A	PD-92(CN6) BOARD, COMPLETE (TRV15/TRV15PK/TRV25/TRV25PK/TRV215)		317	3-987-624-01	COVER (C) (870), HINGE (TRV65/TRV65PK/TRV615)	
304	A-7073-452-A	PD-92(SP6) BOARD, COMPLETE (TRV35E)		317	3-987-624-11	COVER (C) (870), HINGE (TRV35/TRV35E)	
304	A-7073-460-A	PD-92(CP6) BOARD, COMPLETE (TRV15E/TRV15EP)		317	3-987-624-21	COVER (C) (870), HINGE (TRV15E/TRV15EP)	
305	3-713-786-21	SCREW (M2X3)		317	3-987-624-31	COVER (C) (870), HINGE (TRV15/TRV15PK/TRV25/TRV25PK/TRV215)	
306	3-987-584-01	HOLDER (870), LCD		318	3-987-585-01	SHEET, MODEL NAME (TRV65)	
307	3-948-339-61	TAPPING		318	3-987-585-11	SHEET, MODEL NAME (TRV15/TRV15PK)	
308	1-668-963-41	FP-642 FLEXIBLE BOARD		318	3-987-585-21	SHEET, MODEL NAME (TRV25)	
309	1-958-379-11	HARNESS (DP-70)		318	3-987-585-31	SHEET, MODEL NAME (TRV35)	
310	A-7093-473-A	INDICATION LCD BLOCK ASSY (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)		318	3-987-585-41	SHEET, MODEL NAME (TRV35E)	
310	A-7093-509-A	INDICATION LCD BLOCK ASSY (TRV35/TRV35E)		318	3-987-585-51	SHEET, MODEL NAME (TRV15E)	
310	A-7093-486-A	INDICATION LCD BLOCK ASSY (TRV65/TRV65PK/TRV615)		318	3-987-586-01	SHEET, MODEL NAME (TRV615)	
311	X-3948-158-1	CABINET (C) (870) ASSY, P (TRV65/TRV65PK)		318	3-987-586-11	SHEET, MODEL NAME (TRV215)	
311	X-3948-159-1	CABINET (C) (846) ASSY, P (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)		LCD901	1-803-035-21	INDICATOR MODULE, LIQUID CRYST (TRV35/TRV65/TRV65PK/TRV615/TRV35E)	
311	X-3948-160-1	CABINET (C) (872) ASSY, P (TRV35/TRV35E)		LCD901	1-803-040-21	INDICATOR MODULE, LIQUID CRYST (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
311	X-3948-161-1	CABINET (C) (878D) ASSY, P (TRV615)		△ ND801	1-517-751-11	TUBE, FLUORESCENT, COLD CATHODE (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
312	3-962-826-01	SCREW (2X4)		△ ND801	1-517-752-11	TUBE, FLUORESCENT, COLD CATHODE (TRV35/TRV65/TRV65PK/TRV615/TRV35E)	
				△ ND802	1-517-759-11	LIGHT, BACK (TRV65/TRV65PK/TRV615)	

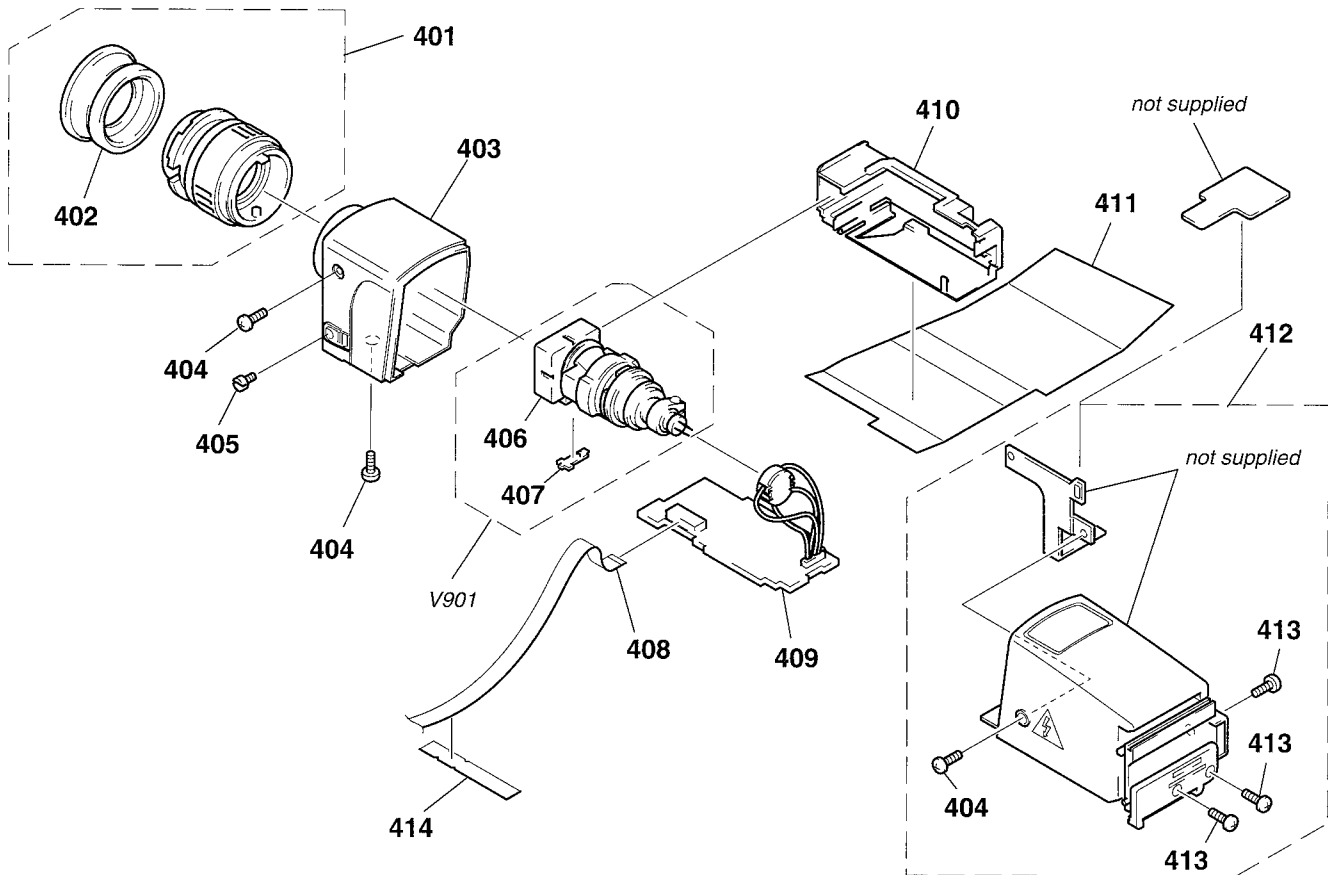
6-1-8. EVF BLOCK ASSEMBLY (COLOR EVF) (TRV93)



The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque $\triangle$ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.
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Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
351	3-968-729-61	SCREW (M2X3), LOCK ACE, P2		358	X-3948-229-1	LENS ASSY (860), VF	
352	X-3948-235-1	CABINET (FRONT) (884) ASSY,EVF		* 359	3-960-302-11	CUSHION (1), LCD	
353	A-7073-438-A	VF-120 BOARD BOARD, COMPLETE		360	A-7073-437-A	VF-119 BOARD , COMPLETE	
354	A-7073-439-A	LB-54 BOARD BOARD, COMPLETE		362	1-668-962-11	FP-638 FLEXIBLE BOARD	
* 355	3-987-667-01	SHEET, VF LIGHT INTERCEPTION		363	X-3946-886-1	HOLDER ASSY, PRISM	
* 356	3-987-666-01	SHEET (860), INSULATING, VF		LCD902	8-753-023-37	LCX024AK	
357	X-3948-236-1	CABINET(REAR)(SC)(884)ASSY,EVF		$\triangle$ ND5351	1-517-414-51	FLUORESCENT TUBE (0.55 INCH)	

6-1-9. EVF BLOCK ASSEMBLY (B/W EVF) (EXCEPT TRV93)

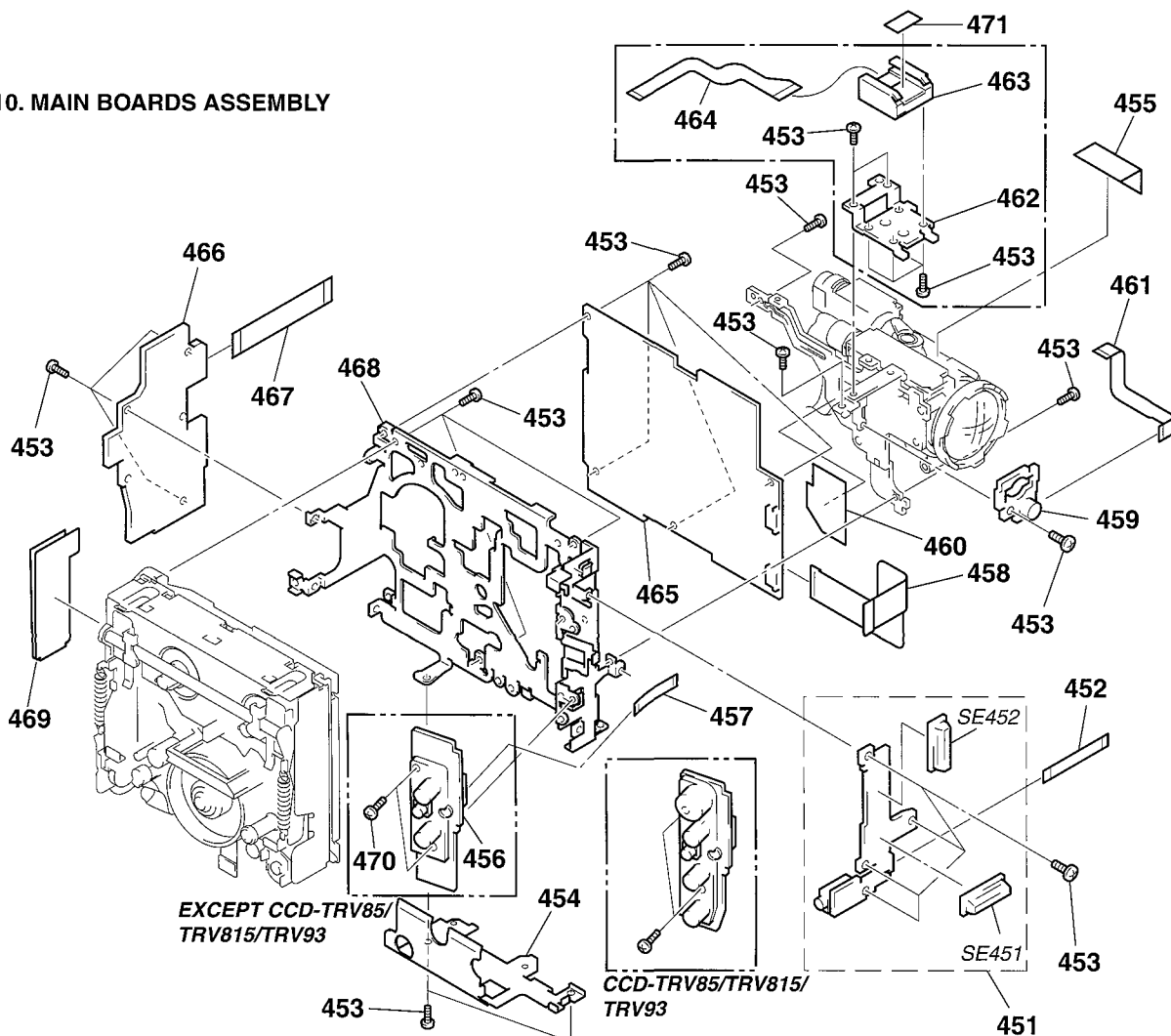


The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

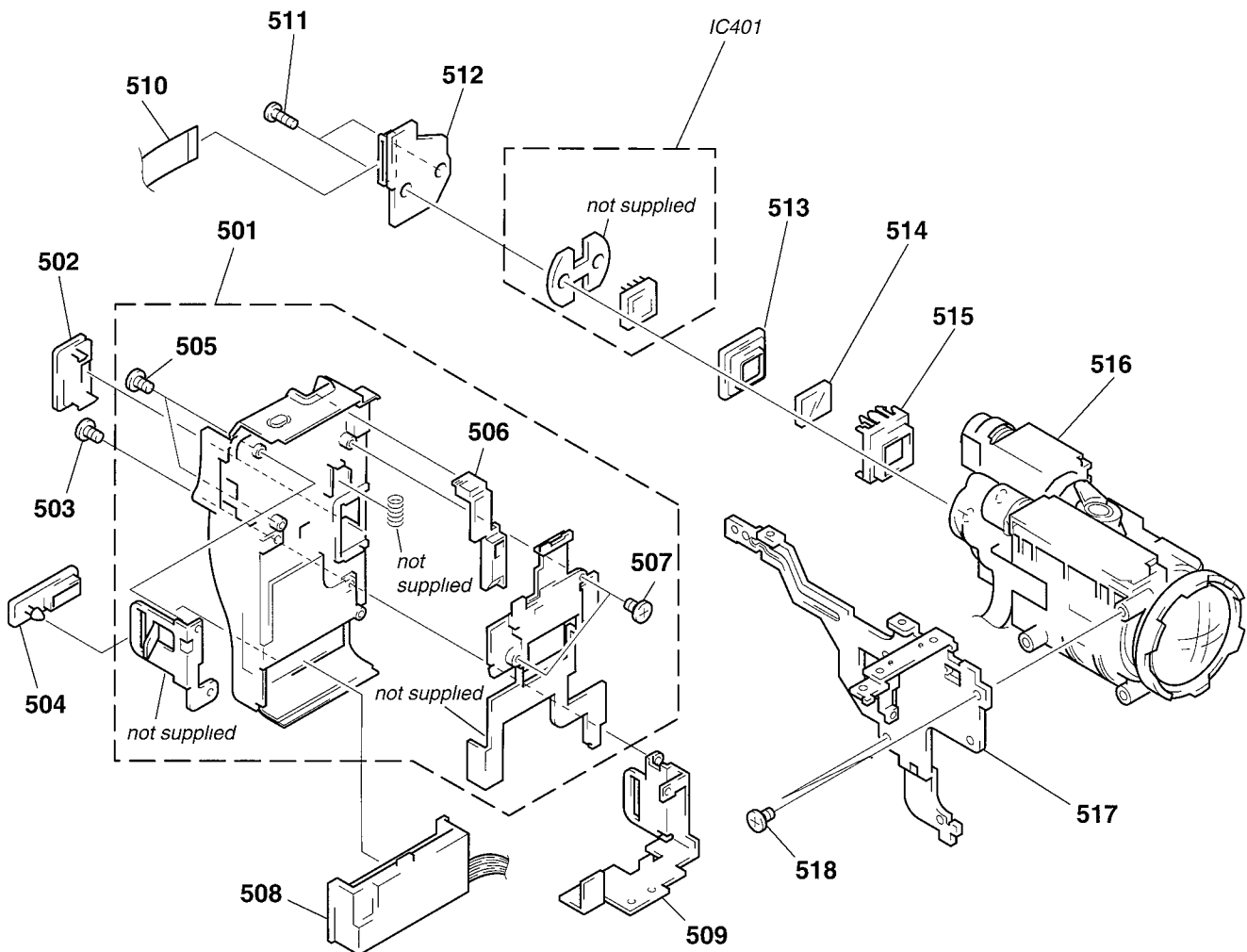
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
401	X-3944-966-1	FINDER ASSY		410	X-3948-279-1	HOLDER (878) ASSY, CRT	
402	3-963-391-01	EYE CUP		* 411	3-987-844-01	SHEET, VF (B/W) ELECTROSTATIC	
403	X-3948-278-1	CABINET (REAR) (878) B ASSY (EXCEPT TRV85/TRV815)		412	X-3948-277-1	CABINET (FRONT) (878) B ASSY (TRV65/TRV65PK/TRV615)	
403	X-3948-281-1	CABINET (REAR) (887) B ASSY (TRV85/TRV815)		412	X-3948-280-1	CABINET (FRONT) (887) B ASSY (TRV85)	
404	3-968-729-61	SCREW (M2X3), LOCK ACE, P2		412	X-3948-362-1	CABINET (FRONT) (846) B ASSY (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
405	3-975-898-01	SCREW (T), F LOCK		412	X-3948-363-1	CABINET (FRONT) (872) B ASSY (TRV35/TRV35E)	
406	3-977-292-01	MASK, CRT		412	X-3948-366-1	CABINET (FRONT) (887D) B ASSY (TRV815)	
407	3-725-130-01	COVER, HINGE VOLTAGE		413	3-948-339-61	TAPPING	
408	1-783-241-11	CABLE, FLEXIBLE FLAT (FFC-235)		* 414	3-987-843-01	SHEET, VF FLEXIBLE LOCK	
409	A-7056-774-A	VF-99(HP) BOARD, COMPLETE (TRV15E/TRV15EP/TRV35E)		Δ V901	1-452-673-31	CRT ASSY (M01KXX90WB)(EXCEPT TRV93)	
409	A-7066-792-A	VF-99(VHL4) BOARD, COMPLETE (EXCEPT TRV15E/TRV15EP/TRV35E)					

6-1-10. MAIN BOARDS ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
451	A-7073-404-A	SE-66(V) BOARD, COMPLETE (TRV15/TRV15PK/TRV15E/TRV15EP)		463	1-774-867-31	CONNECTOR,EXTERNAL(HOT SHOE)8P (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
451	A-7073-409-A	SE-66(VH) BOARD, COMPLETE (TRV65/TRV65PK/TRV615)		463	X-3946-197-1	SHOE ASSY(TRV35/TRV35E)	
451	A-7073-434-A	SE-67(VH) BOARD, COMPLETE (TRV85/TRV815/TRV93)		464	1-668-978-11	FP-633 FLEXIBLE BOARD (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
451	A-7073-443-A	SE-66(VMM) BOARD, COMPLETE (TRV25/TRV25PK/TRV215/TRV35/TRV35E)		465	A-7093-449-A	VC-195(VHIOU) BOARD, COMPLETE (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
452	1-668-957-11	FP-621 FLEXIBLE BOARD		465	A-7093-450-A	VC-195(VMMIOU) BOARD, COMPLETE (TRV35)	
453	3-713-786-21	SCREW (M2X3)		465	A-7093-451-A	VC-195(7VMMU) BOARD, COMPLETE (TRV25/TRV25PK/TRV215)	
* 454	3-987-675-01	FRAME (B), MD (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		465	A-7093-452-A	VC-195(7VZU) BOARD, COMPLETE (TRV15/TRV15PK)	
454	X-3948-224-1	FRAME (B) ASSY, MD (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		465	A-7093-455-A	VC-195(VMMOP) BOARD, COMPLETE (TRV35E)	
* 455	3-989-122-01	SHEET, LENS INSULATING		465	A-7093-456-A	VC-195(VZOP) BOARD, COMPLETE (TRV15E/TRV15EP)	
456	A-7073-405-A	PJ-83(M) BOARD, COMPLETE (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		465	A-7093-459-A	VC-195(VHCIBOU) BOARD, COMPLETE (TRV93)	
456	A-7073-410-A	PJ-83(H) BOARD, COMPLETE (TRV65/TRV65PK/TRV615)		466	A-7073-408-A	DD-105(VMMIF) BOARD, COMPLETE (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
456	A-7073-433-A	PJ-84(H) BOARD, COMPLETE (TRV85/TRV815/TRV93)		466	A-7073-416-A	DD-105(VMMI) BOARD, COMPLETE (TRV15 E,H,K,BR/TRV15PK/TRV25PK/TRV35 E,H,K/TRV15E/TRV35E)	
457	1-668-956-11	FP-620 FLEXIBLE BOARD		466	A-7073-417-A	DD-105(VMMIF) BOARD, COMPLETE (TRV15 US,CND/TRV25/TRV215)	
458	1-668-960-11	FP-629 FLEXIBLE BOARD		466	A-7073-453-A	DD-105(VCIBF) BOARD, COMPLETE (TRV93)	
459	A-7073-454-A	VL-19 BOARD, COMPLETE (TRV93)		467	1-668-958-11	FP-622 FLEXIBLE BOARD	
* 460	3-987-718-01	PROTECTOR, HS FLEXIBLE (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		468	3-987-711-01	FRAME (A), MD	
461	1-668-961-11	FP-632 FLEXIBLE BOARD (TRV93)		* 469	3-987-716-01	PROTECTOR, LS FLEXIBLE	
462	3-987-719-01	BRACKET, SHOE (TRV15 BR/TRV15PK/TRV25PK/TRV215 CND/TRV35/TRV65/TRV615/ TRV85/TRV815/TRV15E/TRV35E)		470	3-948-339-61	TAPPING	
				471	2-532-810-00	CUSHION	
				SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	
				SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	

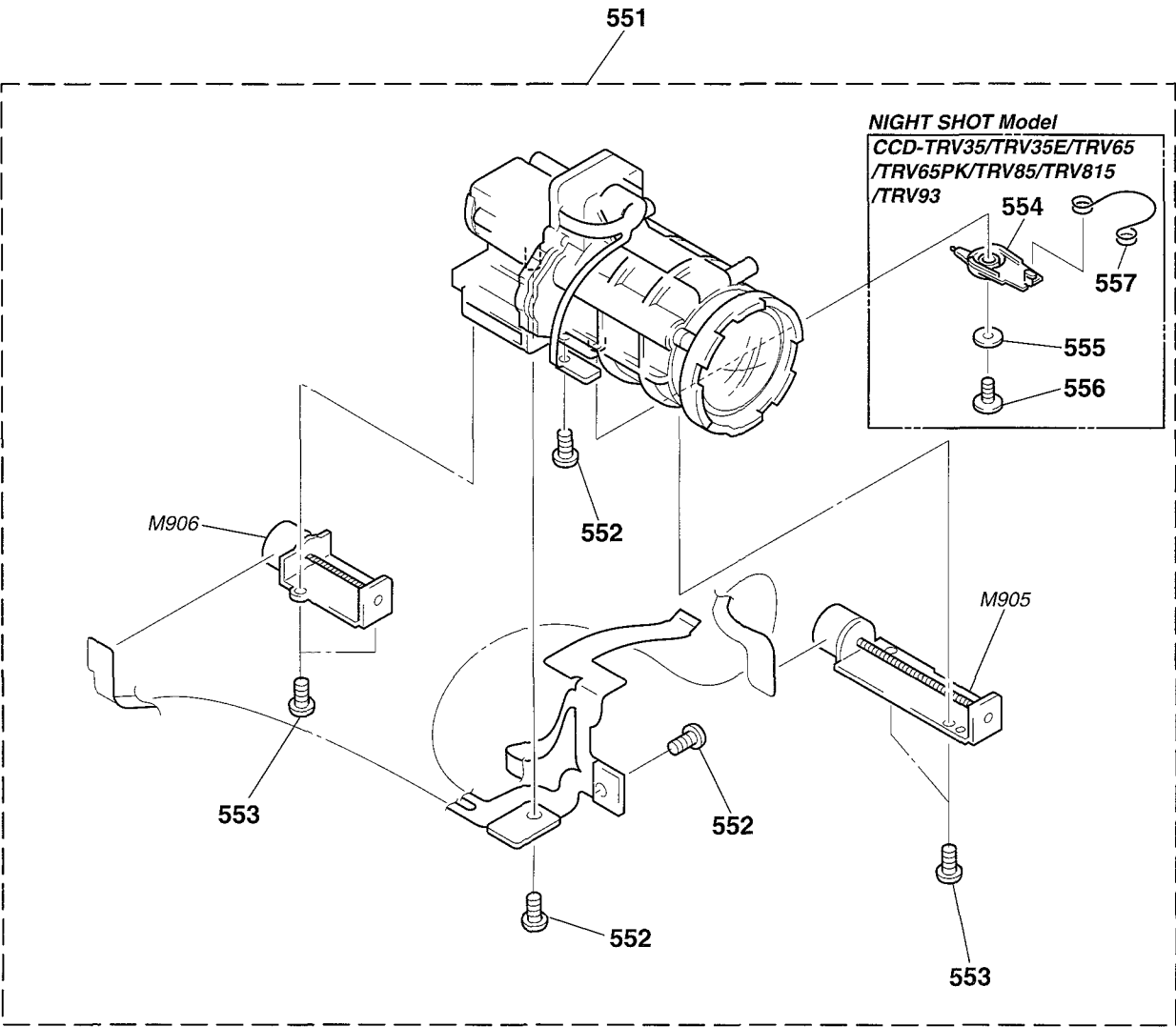
6-1-11. BATTERY PANEL AND CCD BLOCK ASSEMBLY



Be sure to read "Note on the CCD Imager replacement" on page 4-9 when changing the CCD imager.

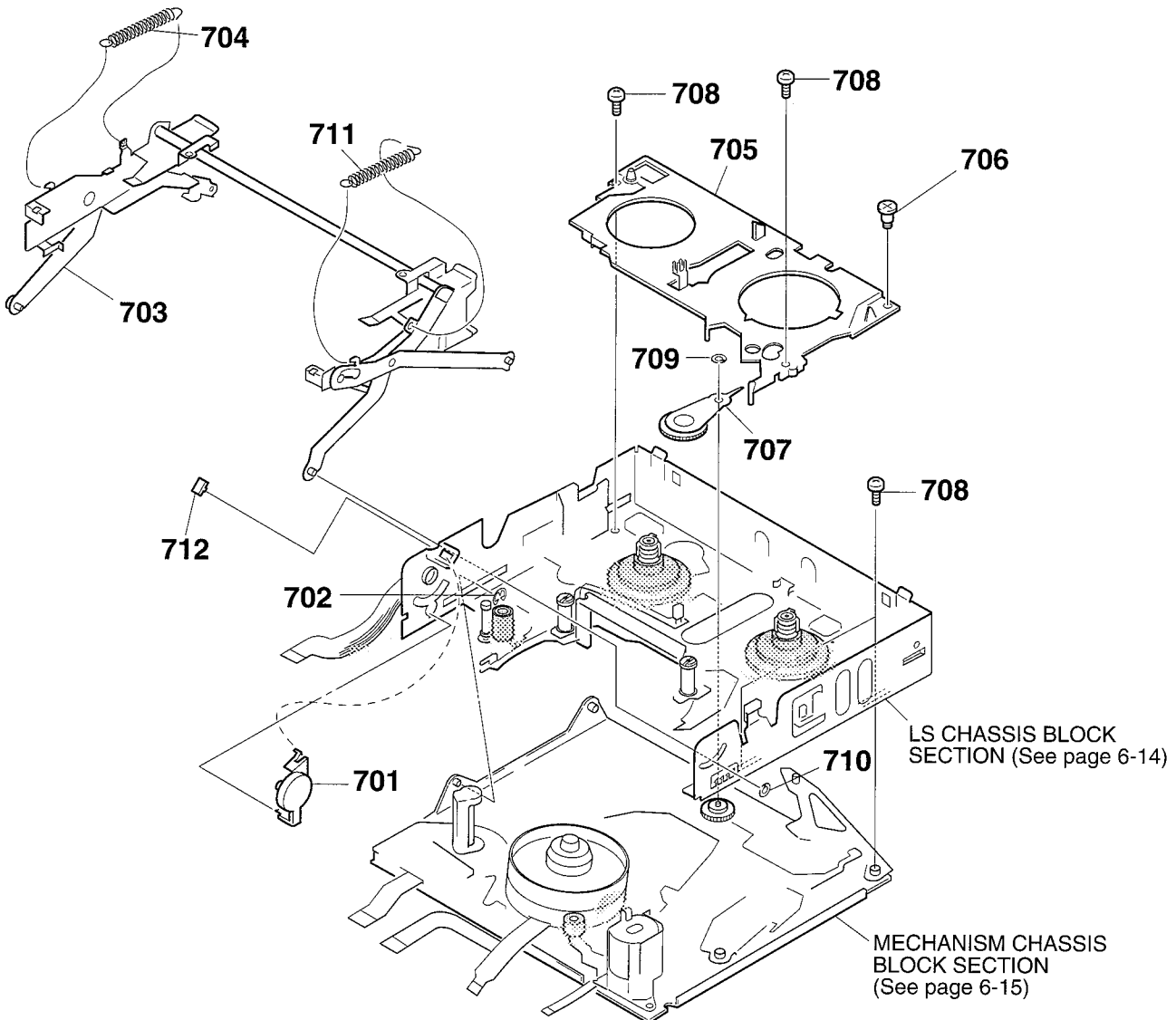
Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
501	X-3948-171-1	PANEL ASSY, BATTERY (EXCEPT TRV15 BR/TRV85/TRV93/TRV815)		513	3-968-054-11	RUBBER (FM), SHIELD (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
501	X-3948-172-1	PANEL ASSY, BATTERY (TRV85/TRV815/TRV93)		514	1-758-084-21	FILTER BLOCK, OPTICAL (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
501	X-3948-461-1	PANEL ASSY, BATTER (TRV15 BR)		514	1-758-133-21	FILTER BLOCK, OPTICAL (TRV15/TRV15PK/TRV15E/TRV15EP)	
502	3-975-752-01	LID (BT), CPC		515	3-978-981-11	ADAPTOR (FK), CCD FITTING	
503	3-962-826-01	SCREW (2X4)		516	8-848-722-01	DEVICE, LENS LSV-600A(SOC) (TRV35/TRV65/TRV65PK/TRV615/TRV85/TRV815/TRV93/TRV35E)	
× 504	3-987-683-01	LID, BATTERY		516	8-848-724-01	DEVICE, LENS LSV-601A(SOC) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
505	3-968-729-61	SCREW (M2X3), LOCK ACE, P2		517	3-987-712-01	FRAME, LENS	
506	3-987-656-01	LID, JACK		518	3-948-339-61	TAPPING	
507	3-713-791-51	SCREW (M1 7X3 5), TAPPING, P2		IC401	A-7030-862-A	CCD BLOCK ASSY (TRV15/TRV15PK)	
508	1-694-384-11	TERMINAL BOARD, BATTERY		IC401	A-7030-865-A	CCD BLOCK ASSY (TRV25/TRV25PK/TRV215/TRV35/TRV65/TRV65PK/TRV615/TRV85/ TRV815/TRV93)	
509	3-987-679-01	SHEET METAL (LOWER), STRAP		IC401	A-7030-871-A	CCD BLOCK ASSY (TRV35E)	
510	1-668-959-11	FP-623 FLEXIBLE BOARD		IC401	A-7030-874-A	CCD BLOCK ASSY (TRV15E/TRV15EP)	
511	3-318-203-11	SCREW (B1 7X6), TAPPING					
512	A-7073-407-A	CD-197 BOARD, COMPLETE (EXCEPT TRV85/TRV93/TRV815)					
512	A-7073-435-A	CD-198 BOARD, COMPLETE (TRV85/TRV815/TRV93)					
513	3-953-817-01	RUBBER (F), SEAL (TRV15/TRV15PK/TRV15E/TRV15EP)					

6-1-12. DEVICE LENS (LSV-600A/LSV-601A)



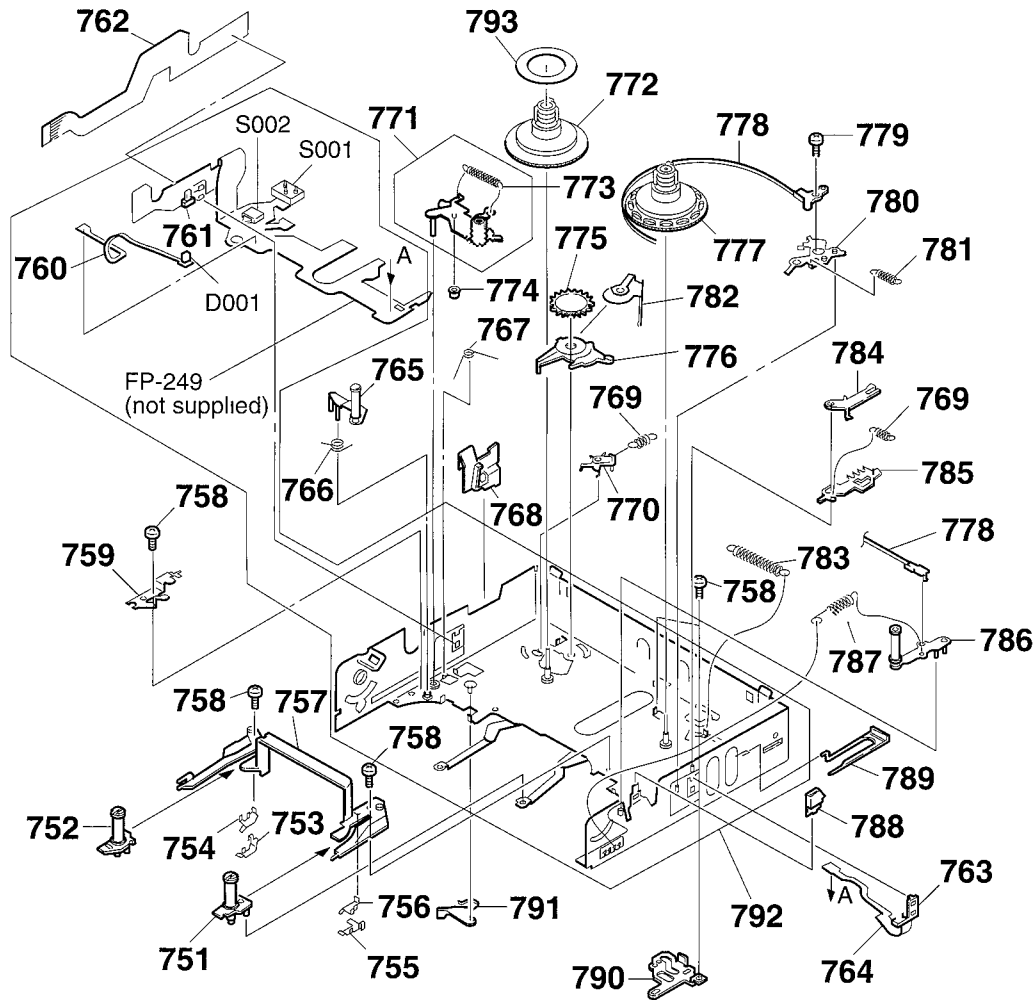
Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
551	8-848-722-01	DEVICE, LENS LSV-600A(SOC)(NIGHT SHOT)		555	2-327-405-01	WASHER	
	(TRV35/TRV65/TRV65PK/TRV615/TRV85/TRV815/TRV93/TRV35E)			556	3-623-756-21	SCREW (B1 7x5), P	
551	8-848-724-01	DEVICE, LENS LSV-601A(SOC)		557	3-979-037-11	SPRING, RETURN	
	(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)			M905	1-763-047-11	MOTOR, FOCUS STEPPING	
552	3-713-791-51	SCREW (M1 7X3 5), TAPPING, P2		M906	1-763-046-11	MOTOR, ZOOM STEPPING	
553	3-713-791-41	SCREW (M1 7X5), TAPPING, PS					
554	3-979-029-01	LEVER, IR					

6-1-13. CASSETTE COMPARTMENT ASSEMBLY



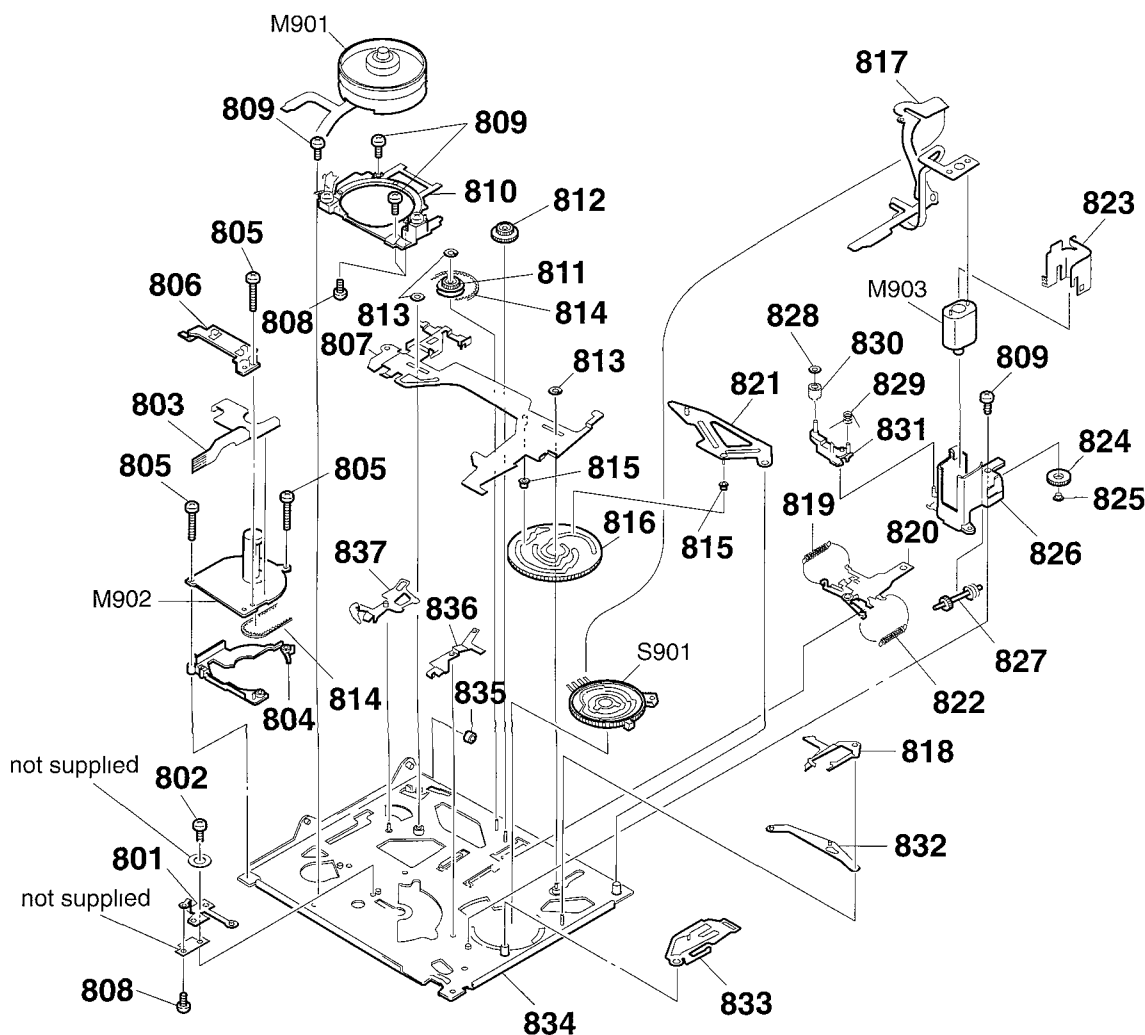
<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>	<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
701	A-7040-421-A	DAMPER ASSY		707	X-3945-399-1	GEAR ASSY, GOOSENECK	
702	7-624-102-04	STOP RING 1.5, TYPE -E		708	3-947-503-01	SCREW (M1.4X2.5)	
703	X-3945-400-X	CASSETTE COMPARTMENT ASSY		709	3-331-007-21	WASHER	
704	3-965-587-03	SPRING, TENSION		710	3-727-176-01	WASHER, STOPPER	
705	3-965-584-08	RETAINER, GOOSENECK					
				711	3-973-268-01	SPRING, TENSION	
706	3-976-055-01	SCREW (M1.4X1)		712	3-971-076-01	FASTENER, D	

6-1-14. LS CHASSIS ASSEMBLY



Ref. No	Part No	Description	Remark	Ref. No	Part No	Description	Remark
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE		775	3-965-563-01	GEAR, T SOFT	
752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE		776	3-965-565-01	CLAW, T SOFT	
753	3-965-559-01	STOPPER (T)		777	X-3945-397-1	DECK ASSY, REEL, S	
754	3-965-557-01	STOPPER (T), GB		778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
755	3-965-558-01	STOPPER (S)		779	3-945-756-01	SCREW (M1 4X3)	
756	3-965-556-01	STOPPER (S), GB		780	3-965-583-01	ARM, RVS	
757	3-965-553-01	RAIL, GUIDE		781	3-965-580-01	SPRING, TENSION	
758	3-947-503-01	SCREW (M1 4X2 5)		782	3-966-384-01	SPRING, T SOFT	
759	3-965-573-01	RETAINER, TG4		783	3-965-578-01	SPRING, TENSION COIL	
760	1-658-213-11	FP-355 FLEXIBLE BOARD		784	3-965-560-01	RATCHET, S	
761	3-965-552-01	HOLDER (T), SENSOR		785	3-965-561-01	PLATE, RELEASE, S RATCHET	
762	1-657-786-13	FP-221 FLEXIBLE BOARD		786	X-3945-395-1	ARM ASSY, TG1	
763	3-965-551-01	HOLDER (S), SENSOR		787	3-965-576-01	SPRING (TG1), TENSION	
764	1-658-214-11	FP-356 FLEXIBLE BOARD		788	3-965-567-01	LID OPEN	
765	A-7040-417-A	ARM BLOCK ASSY, TG4		789	3-965-566-01	COVER, LS GUIDE	
766	3-965-574-01	SPRING, TORSION		* 790	3-965-577-01	PLATE, CAM, LS	
767	3-965-575-01	SPRING (PINCH), TORSION		791	3-965-569-01	ARM, EJ	
768	3-965-568-01	GUIDE, LOCK		792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
769	3-965-562-01	SPRING (RATCHET), TENSION		* 793	3-972-838-01	SPACER, REEL	
770	3-965-581-03	RATCHET, T		D001	8-719-988-42	DIODE GL453	
771	X-3945-394-1	ARM ASSY, PINCH		S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
772	X-3945-398-2	DECK ASSY, REEL, T		S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C C LOCK)	
773	3-965-648-01	SPRING (PINCH), TENSION					
774	3-965-579-01	ROLLER, PINCH PRESS					

6-1-15. MECHANISM CHASSIS ASSEMBLY



Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
801	X-3947-343-1	GROUND (IM) ASSY, SHAFT		823	3-965-542-01	SHIELD, MOTOR	
802	3-965-550-02	SCREW (M1 7X1 6)		824	3-965-539-01	GEAR (A)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD		825	3-965-538-01	SLEEVE, MOTOR HOLDER	
804	3-965-545-01	SPACER, CAPSTAN		826	3-965-540-01	HOLDER, MOTOR	
805	3-965-549-01	SCREW (M1 4 X 6 5)		827	3-965-541-01	SHAFT, WORM	
806	3-966-349-01	HOLDER, FLEXIBLE		828	3-321-393-01	WASHER, STOPPER	
807	3-971-644-01	SLIDER (2), M		829	3-965-724-01	SPRING, TORSION	
808	3-971-939-01	SCREW (M1 4)		830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
809	3-947-503-01	SCREW (M1 4X2 5)		831	X-3945-407-1	ARM ASSY, HC ROLLER	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM		832	3-965-531-01	ARM, GL	
811	3-965-527-01	GEAR, CHANGE		833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
812	3-965-544-01	GEAR, RELAY		834	X-3947-915-2	CHASSIS ASSY, MECHANICAL	
813	3-331-007-21	WASHER		835	3-965-526-02	ROLLER, LS GUIDE	
814	3-965-546-01	BELT, TIMING		836	3-965-547-01	ARM, HC DRIVING	
815	3-965-533-01	ROLLER, LS		837	3-965-534-01	PLATE, PRESS, PINCH	
816	3-965-528-01	GEAR, CAM		M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R)(PAL)	
817	1-657-784-11	FP-220 FLEXIBLE BOARD				(TRV15E/TRV15EP/35E)	
818	3-965-529-01	PLATE, REGULATOR (LIMITER ARM T), COIL		M901	A-7048-842-A	DRUM ASSY (DGH-0E1A-R)(NTSC)(5HEAD)	
819	3-965-536-01	SPRING (LIMITER ARM T), COIL				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
820	X-3945-388-1	SLIDER ASSY, GL		M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R)(NTSC)(3HEAD)	
821	3-965-532-01	ARM, LS				(TRV15/TRV15PK/TRV25/TRV25PK/TRV35TRV215)	
822	3-965-535-01	SPRING (LIMITER ARM S), COIL		M902	8-835-531-32	CAPSTAN ASSY	
				M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
				S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

6-2. ELECTRICAL PARTS LIST

Note

The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

Les composants identifiés par une marque Δ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “ ” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- RESISTORS
All resistors are in ohms.
METAL Metal-film resistor
METAL OXIDE Metal Oxide-film resistor
F nonflammable
- SEMICONDUCTORS
In each case, u μ , for example
uA μ A, uPA μ PA, uPB μ PB,
uPC μ PC, uPD μ PD

- CAPACITORS
uF μ F
- COILS
uH μ H
- Abbreviation
Canadian model is abbreviated as CND
East European model is abbreviated as EE
Hong Kong model is abbreviated as HK
North European model is abbreviated as NE
Russian model is abbreviated as RU
Chinese model is abbreviated as CN
Tourist model is abbreviated as JE
Brazilian model is abbreviated as BR
Australian model is abbreviated as AUS

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
	A-7073-407-A	CD-197 BOARD, COMPLETE ~~~~~	(EXCEPT TRV85/TRV93/TRV815) (Ref No. 4,000 Series)		A-7073-403-A	CF-50(E7V) BOARD, COMPLETE ~~~~~	(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)
	A-7073-435-A	CD-198 BOARD, COMPLETE ~~~~~	(TRV85/TRV93/TRV815) (Ref No. 9,000 Series) (IC401 is not including to the mounted board)		A-7073-412-A	CF-50(ESV) BOARD, COMPLETE ~~~~~	(TRV35/TRV35E/TRV65/TRV65PK/TRV615) (Ref No. 4,000 Series)
		< CAPACITOR >			A-7073-431-A	CF-51(VH) BOARD, COMPLETE ~~~~~	(TRV85/TRV815)
C401	1-164-156-11	CERAMIC CHIP	0 1uF 25V		A-7073-456-A	CF-51(VHC) BOARD, COMPLETE (TRV93) ~~~~~	(Ref No. 9,000 Series)
C405	1-135-210-11	TANTALUM CHIP	4 7uF 20% 10V			< BATTERY HOLDER >	
C406	1-135-214-21	TANTAL CHIP	4 7uF 20% 20V			< CONNECTOR >	
		< CONNECTOR >				< DIODE >	
CN401	1-766-346-21	CONNECTOR, FFC/FPC 16P		BH001	1-550-104-11	HOLDER, BATTERY	
		< IC >				< CONNECTOR >	
IC401	A-7030-862-A	CCD BLOCK ASSY (206 SERVICE)(CCD IMAGR) (TRV15/TRV15PK)		CN001	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P	
IC401	A-7030-865-A	CCD BLOCK ASSY (209 SERVICE)(CCD IMAGR) (TRV25/TRV25PK/TRV35/TRV65/TRV65PK/ TRV85/TRV93/TRV215/TRV615/TRV815)		CN002	1-774-765-11	CONNECTOR, FFC/FPC 8P	
IC401	A-7030-871-A	CCD BLOCK ASSY (211 SERVICE)(CCD IMAGR) (TRV35E)		CN003	1-580-055-21	PIN, CONNECTOR 2P	
IC401	A-7030-874-A	CCD BLOCK ASSY (207 SERVICE)(CCD IMAGR) (TRV15E/TRV15EP)		CN005	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P	
		< COIL >		CN006	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
L401	1-414-757-11	INDUCTOR	100uH	CN007	1-779-334-11	CONNECTOR, FFC/FPC 20P (TRV93)	
		< TRANSISTOR >		CN008	1-778-283-11	CONNECTOR, FFC/FPC 4P (EXCEPT TRV93)	
Q402	8-729-117-73	TRANSISTOR	2SC4178-F13F14-T1			< DIODE >	
		< RESISTOR >		D001	8-719-059-57	DIODE MAZJ082DFLSO	
R404	1-216-829-11	METAL CHIP	4 7K 5% 1/16W	D005	8-719-420-14	DIODE MA8082-TX	
R405	1-216-809-11	METAL CHIP	100 5% 1/16W	D006	8-719-420-14	DIODE MA8082-TX	
				D008	8-719-404-49	DIODE MA111-TX	

Be sure to read "Note on the CCD Imager replacement" on page 4-9 when changing the CCD imager.

Ref No	Part No	Description	Remark
< TRANSISTOR >			
Q001	8-729-402-42	TRANSISTOR UN5213-TX (EXCEPT TRV93)	
Q003	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
Q005	8-729-230-72	TRANSISTOR 2SA1362-YG-EL (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
< RESISTOR >			
R003	1-216-833-11	METAL CHIP 10K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R005	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R006	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R007	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R008	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R009	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R013	1-216-822-11	METAL CHIP 1 2K 5% 1/16W	
R015	1-216-822-11	METAL CHIP 1 2K 5% 1/16W	
R016	1-216-822-11	METAL CHIP 1 2K 5% 1/16W	
R019	1-216-823-11	METAL CHIP 1 5K 5% 1/16W	
R020	1-216-823-11	METAL CHIP 1 5K 5% 1/16W	
R022	1-216-823-11	METAL CHIP 1 5K 5% 1/16W	
R023	1-216-825-11	METAL CHIP 2 2K 5% 1/16W	
R025	1-216-825-11	METAL CHIP 2 2K 5% 1/16W	
R026	1-216-825-11	METAL CHIP 2 2K 5% 1/16W	
R029	1-216-828-11	METAL CHIP 3 9K 5% 1/16W	
R031	1-216-828-11	METAL CHIP 3 9K 5% 1/16W	
R032	1-216-828-11	METAL CHIP 3 9K 5% 1/16W	
R036	1-216-832-11	METAL CHIP 8 2K 5% 1/16W	
R038	1-216-832-11	METAL CHIP 8 2K 5% 1/16W	
R039	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R041	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R049	1-216-849-11	METAL CHIP 220K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R050	1-216-853-11	METAL CHIP 470K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R051	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R052	1-216-829-11	METAL CHIP 4 7K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R053	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
< SWITCH >			
S003	1-762-851-21	SWITCH, KEY BOARD (DATE)	
S004	1-771-029-21	SWITCH, TACTILE (PROGRAM AE)	
S006	1-762-851-21	SWITCH, KEY BOARD (PICTURE EFFECT)	
S008	1-762-851-21	SWITCH, KEY BOARD (COUNTER RESET)	
S010	1-762-851-21	SWITCH, KEY BOARD (MENU)	
S012	1-771-029-21	SWITCH, TACTILE (EXPOSURE) (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
S013	1-762-851-21	SWITCH, KEY BOARD (END SEARCH)	
S015	1-771-025-21	SWITCH, ROTARY (ENCODER) (SEL/PUSH ENCH)	
S017	1-771-029-21	SWITCH, TACTILE (BACK LIGHT)	
S018	1-762-851-21	SWITCH, KEY BOARD (TITLE)	
S021	1-762-851-21	SWITCH, KEY BOARD (TIME)	
S022	1-762-851-21	SWITCH, KEY BOARD (DISPLAY)	
S024	1-762-648-21	SWITCH, SLIDE (START/STOP MODE)	
S027	1-771-029-21	SWITCH, TACTILE (FADER)(TRV85/TRV815/TRV93)	

Ref No	Part No	Description	Remark
A-7073-408-A	DD-105(VMMIF) BOARD, COMPLETE	***** (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
A-7073-416-A	DD-105(VMMI) BOARD, COMPLETE	***** (TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
A-7073-417-A	DD-105(VMMIF) BOARD, COMPLETE	***** (TRV15 US,CND/TRV25/TRV215)	
A-7073-453-A	DD-105(VCIBF) BOARD, COMPLETE (TRV93)	***** (Ref No 2,000 Series)	
< CAPACITOR >			
C801	1-162-967-11	CERAMIC CHIP 0 0033uF 10% 50V	
C802	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C803	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C804	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C805	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C806	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C807	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C808	1-164-227-11	CERAMIC CHIP 0 022uF 10% 25V	
C809	1-162-967-11	CERAMIC CHIP 0 0033uF 10% 50V	
C810	1-164-227-11	CERAMIC CHIP 0 022uF 10% 25V	
C811	1-162-965-11	CERAMIC CHIP 0 0015uF 10% 50V	
C812	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C813	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C814	1-104-913-11	TANTAL CHIP 10uF 20% 16V	
C815	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C816	1-119-751-91	TANTAL CHIP 22uF 20% 16V	
C817	1-113-991-11	TANTAL CHIP 33uF 20% 16V	
C819	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C820	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C821	1-162-964-11	CERAMIC CHIP 0 001uF 10% 50V	
C822	1-104-913-11	TANTAL CHIP 10uF 20% 16V	
C823	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C824	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C825	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C826	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C827	1-164-227-11	CERAMIC CHIP 0 022uF 10% 25V	
C828	1-162-962-11	CERAMIC CHIP 470PF 10% 50V	
C829	1-162-966-11	CERAMIC CHIP 0 0022uF 10% 50V	
C830	1-162-966-11	CERAMIC CHIP 0 0022uF 10% 50V	
C831	1-164-489-11	CERAMIC CHIP 0 22uF 10% 16V	
C832	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C833	1-162-974-11	CERAMIC CHIP 0 01uF 50V	
C834	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C836	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C837	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C838	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C840	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C841	1-135-157-21	TANTALUM CHIP 10uF 20% 6 3V	
C843	1-135-157-21	TANTALUM CHIP 10uF 20% 6 3V	
C844	1-135-157-21	TANTALUM CHIP 10uF 20% 6 3V	
C846	1-135-157-21	TANTALUM CHIP 10uF 20% 6 3V	

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
C847	1-164-506-11	CERAMIC CHIP 4 7uF	16V	D818	8-719-027-76	DIODE 1SS357-TPH3	
C848	1-164-506-11	CERAMIC CHIP 4 7uF	16V	D819	8-719-027-76	DIODE 1SS357-TPH3	
C849	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V			(TRV65/TRV65PK/TRV85/TRV615/TRV815)	
C850	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	D932	8-719-045-87	DIODE MA4Z082WA-(K8) SO	
C851	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	D933	8-719-045-87	DIODE MA4Z082WA-(K8) SO	
C852	1-164-505-11	CERAMIC CHIP 2 2uF	16V	D934	8-719-045-87	DIODE MA4Z082WA-(K8) SO	
C853	1-165-319-11	CERAMIC CHIP 0 1uF	50V	D935	8-719-045-87	DIODE MA4Z082WA-(K8) SO	
C854	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V (TRV93)	D936	8-719-045-87	DIODE MA4Z082WA-(K8) SO	
C855	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	D938	8-719-420-14	DIODE MA8082-TX	
C856	1-109-982-11	CERAMIC CHIP 1uF	10% 10V (TRV65/TRV65PK/TRV85/TRV615/TRV815)	< FERRITE BEAD >			
C857	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	FB931	1-414-228-11	FERRITE 0UH	
C860	1-107-826-11	CERAMIC CHIP 0 1uF	10% 16V	FB932	1-414-228-11	FERRITE 0UH	
C861	1-162-970-11	CERAMIC CHIP 0 01uF	10% 25V (TRV93)	FB933	1-414-228-11	FERRITE 0UH	
C861	1-165-176-11	CERAMIC CHIP 0 047uF	10% 16V (EXCEPT TRV93)	FB934	1-414-228-11	FERRITE 0UH	
C862	1-164-227-11	CERAMIC CHIP 0 022uF	10% 25V	< IC >			
C863	1-164-227-11	CERAMIC CHIP 0 022uF	10% 25V	IC801	8-759-384-78	IC SN104241PM-TEB	
C864	1-113-985-11	TANTAL CHIP 10uF	20% 20V	IC802	8-759-492-30	IC MB3817PFV-G-BND	
C865	1-164-505-11	CERAMIC CHIP 2 2uF	16V	< COIL >			
C866	1-164-505-11	CERAMIC CHIP 2 2uF	16V	L804	1-412-056-11	INDUCTOR CHIP 4 7uH	
C867	1-164-346-11	CERAMIC CHIP 1uF	16V (TRV93)	L805	1-424-674-11	COIL, CHOKER 22uH	
C868	1-135-214-21	TANTAL CHIP 4 7uF	20% 20V	L806	1-409-532-41	COIL, CHOKER 33uH	
C869	1-164-505-11	CERAMIC CHIP 2 2uF	16V	L806	1-424-675-11	COIL, CHOKER 33uH	
C871	1-135-157-21	TANTALUM CHIP 10uF	20% 6.3V	L807	1-424-674-11	COIL, CHOKER 22uH	
C872	1-164-227-11	CERAMIC CHIP 0 022uF	10% 25V	L808	1-424-674-11	COIL, CHOKER 22uH	
C873	1-164-227-11	CERAMIC CHIP 0 022uF	10% 25V	L809	1-424-674-11	COIL, CHOKER 22uH	
C875	1-164-489-11	CERAMIC CHIP 0 22uF	10% 16V	L810	1-414-396-21	INDUCTOR 4 7uH	
C876	1-107-826-11	CERAMIC CHIP 0 1uF	10% 16V	L811	1-414-396-21	INDUCTOR 4 7uH	
C877	1-107-826-11	CERAMIC CHIP 0 1uF	10% 16V	L812	1-414-396-21	INDUCTOR 4 7uH	
< CONNECTOR >				L813	1-414-396-21	INDUCTOR 4 7uH	
✓ CN801	1-580-756-21	PIN, CONNECTOR 7P		L814	1-414-396-21	INDUCTOR 4 7uH	
CN931	1-691-520-11	CONNECTOR, BOARD TO BOARD 48P		L815	1-414-396-21	INDUCTOR 4 7uH	
CN932	1-766-346-21	CONNECTOR, FFC/FPC 16P		L816	1-414-396-21	INDUCTOR 4 7uH (TRV93)	
CN933	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P		L817	1-414-396-21	INDUCTOR 4 7uH	
CN934	1-766-673-21	CONNECTOR, FFC/FPC 12P		L818	1-414-396-21	INDUCTOR 4 7uH	
CN935	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P		L819	1-414-400-11	INDUCTOR 22uH	
< DIODE >				L820	1-424-674-11	COIL, CHOKER 22uH	
D801	8-719-067-36	DIODE MA3ZD1200LS0		< FILTER >			
D802	8-719-067-36	DIODE MA3ZD1200LS0		LF801	1-411-957-11	FILTER, COMMON MODE	
D803	8-719-067-36	DIODE MA3ZD1200LS0		< FUSE, IC LINK >			
D804	8-719-067-36	DIODE MA3ZD1200LS0		△ PS801	1-533-760-21	FUSE (SMD) 1 4A	
D805	8-719-067-36	DIODE MA3ZD1200LS0				(EXCEPT TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
D806	8-719-027-76	DIODE 1SS357-TPH3		△ PS801	1-533-761-21	LINK, IC (SMD) 1 4A	
D807	8-719-067-36	DIODE MA3ZD1200LS0				(TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
D809	8-719-027-77	DIODE MA796-TX		△ PS802	1-533-760-21	FUSE (SMD) 1 4A	
D810	8-719-027-76	DIODE 1SS357-TPH3				(EXCEPT TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
D812	8-719-027-76	DIODE 1SS357-TPH3		△ PS802	1-533-761-21	LINK, IC (SMD) 1 4A	
D813	8-719-420-14	DIODE MA8082-TX				(TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
D814	8-719-420-14	DIODE MA8082-TX		△ PS803	1-533-760-21	FUSE (SMD) 1 4A	
D815	8-719-420-14	DIODE MA8082-TX				(EXCEPT TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)	
D816	8-719-027-76	DIODE 1SS357-TPH3					
D817	8-719-421-27	DIODE MA728-TX					

The components identified by mark △ or dotted line with mark △ are critical for safety
Replace only with part number specified

Les composants identifiés par une marque △ sont critiques pour la sécurité
Ne les remplacer que par une pièce portant le numéro spécifié

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
△ PS803	1-533-761-21	LINK, IC (SMD) 1 4A (TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)		Q848	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
△ PS804	1-533-760-21	FUSE (SMD) 1 4A (EXCEPT TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)		Q849	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
△ PS804	1-533-761-21	LINK, IC (SMD) (TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)		Q850	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
△ PS805	1-533-760-21	FUSE (SMD) 1 4A (EXCEPT TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)		Q851	8-729-041-69	TRANSISTOR MMSF5P02HDR2	
△ PS805	1-533-761-21	LINK, IC (SMD) 1 4A (TRV15 E,HK,BR/TRV15PK/TRV25PK/TRV35/TRV15E/TRV15EP/TRV35E)		Q852	8-729-017-61	TRANSISTOR 2SB1581-T1	
△ PS806	1-533-760-21	FUSE (SMD) 1 4A (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		Q853	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
< TRANSISTOR >				Q854	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q801	8-729-024-48	TRANSISTOR 2SK1830-TE85L		Q855	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q802	8-729-041-69	TRANSISTOR MMSF5P02HDR2		Q856	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q803	8-729-804-41	TRANSISTOR 2SB1122-ST-TD		Q932	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q804	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		Q933	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q805	8-729-024-48	TRANSISTOR 2SK1830-TE85L		Q934	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q806	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		< RESISTOR >			
Q807	8-729-804-41	TRANSISTOR 2SB1122-ST-TD		R801	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q808	8-729-043-94	TRANSISTOR CPH3106-TL		R802	1-218-893-11	RES,CHIP 82K 0 50% 1/16W	
Q809	8-729-043-94	TRANSISTOR CPH3106-TL		R803	1-216-833-11	METAL CHIP 10K 5% 1/16W	
Q810	8-729-043-94	TRANSISTOR CPH3106-TL		R804	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q812	8-729-041-24	TRANSISTOR NDS355AN		R805	1-216-835-11	METAL CHIP 15K 5% 1/16W	
Q813	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R806	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q814	8-729-043-94	TRANSISTOR CPH3106-TL		R807	1-216-839-11	METAL CHIP 33K 5% 1/16W	
Q815	8-729-043-94	TRANSISTOR CPH3106-TL		R808	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q817	8-729-041-24	TRANSISTOR NDS355AN		R809	1-216-813-11	METAL CHIP 220 5% 1/16W	
Q819	8-729-043-94	TRANSISTOR CPH3106-TL		R810	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q820	8-729-037-74	TRANSISTOR UN9213J-(K8) SO (TRV65/TRV65PK/TRV85/TRV615/TRV815)		R811	1-218-883-11	RES,CHIP 33K 0 50% 1/16W	
Q823	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		R812	1-218-901-11	RES,CHIP 180K 0 50% 1/16W	
Q824	8-729-042-56	TRANSISTOR MGSF3455VT1 (TRV65/TRV65PK/TRV85/TRV615/TRV815)		R813	1-216-857-11	METAL CHIP 1M 5% 1/16W	
Q826	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		R814	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q827	8-729-037-61	TRANSISTOR UN9113J-(K8) SO		R815	1-216-813-11	METAL CHIP 220 5% 1/16W	
Q828	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		R816	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q829	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R817	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q830	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R818	1-216-813-11	METAL CHIP 220 5% 1/16W	
Q831	8-729-041-23	TRANSISTOR NDS356AP		R819	1-218-887-11	RES,CHIP 47K 0 50% 1/16W	
Q832	8-729-041-23	TRANSISTOR NDS356AP		R820	1-216-845-11	METAL CHIP 100K 5% 1/16W	
Q833	8-729-041-23	TRANSISTOR NDS356AP		R821	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q834	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R822	1-216-150-91	RES,CHIP 10 5% 1/8W	
Q835	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R824	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q836	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R825	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q837	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)(TRV93)		R826	1-216-821-11	METAL CHIP 1K 5% 1/16W	
Q838	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R827	1-216-821-11	METAL CHIP 1K 5% 1/16W	
Q839	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R828	1-216-831-11	METAL CHIP 6 8K 5% 1/16W	
Q840	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R829	1-216-837-11	METAL CHIP 22K 5% 1/16W	
Q841	8-729-037-53	TRANSISTOR 2SA1832F-Y/GR(TPL3)(TRV93)		R830	1-218-883-11	RES,CHIP 33K 0 50% 1/16W	
Q842	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R831	1-216-841-11	METAL CHIP 47K 5% 1/16W	
Q843	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R832	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q844	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R833	1-216-839-11	METAL CHIP 33K 5% 1/16W	
Q845	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R834	1-218-883-11	RES,CHIP 33K 0 50% 1/16W	
Q846	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3)(TRV93)		R835	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
Q847	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R836	1-216-837-11	METAL CHIP 22K 5% 1/16W	
				R837	1-216-825-11	METAL CHIP 2 2K 5% 1/16W	
				R838	1-216-837-11	METAL CHIP 22K 5% 1/16W	
				R839	1-216-837-11	METAL CHIP 22K 5% 1/16W	
				R840	1-216-839-11	METAL CHIP 33K 5% 1/16W	
				R841	1-216-834-11	METAL CHIP 12K 5% 1/16W	
				R842	1-216-849-11	METAL CHIP 220K 5% 1/16W	
				R843	1-216-845-11	METAL CHIP 100K 5% 1/16W	
				R845	1-216-821-11	METAL CHIP 1K 5% 1/16W	
				R849	1-216-837-11	METAL CHIP 22K 5% 1/16W	

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Ref. No	Part No	Description			Remark
R850	1-216-857-11	METAL CHIP	1M	5%	1/16W
R852	1-216-823-11	METAL CHIP	1 5K	5%	1/16W
R853	1-216-849-11	METAL CHIP	220K	5%	1/16W
R854	1-216-841-11	METAL CHIP	47K	5%	1/16W
R859	1-216-845-11	METAL CHIP	100K	5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV615/TRV815)			
R864	1-216-857-11	METAL CHIP	1M	5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV615/TRV815)			
R865	1-216-841-11	METAL CHIP	47K	5%	1/16W
R866	1-216-837-11	METAL CHIP	22K	5%	1/16W
R867	1-216-296-91	SHORT	0	(TRV93)	
R868	1-216-849-11	METAL CHIP	220K	5%	1/16W
R870	1-216-857-11	METAL CHIP	1M	5%	1/16W
R871	1-216-857-11	METAL CHIP	1M	5%	1/16W
R872	1-216-845-11	METAL CHIP	100K	5%	1/16W
R873	1-216-841-11	METAL CHIP	47K	5%	1/16W
R874	1-216-857-11	METAL CHIP	1M	5%	1/16W
R875	1-216-849-11	METAL CHIP	220K	5%	1/16W
R876	1-216-845-11	METAL CHIP	100K	5%	1/16W
R878	1-216-857-11	METAL CHIP	1M	5%	1/16W
R879	1-216-837-11	METAL CHIP	22K	5%	1/16W
R880	1-218-895-11	RES,CHIP	100K	0 50%	1/16W
R881	1-216-864-11	METAL CHIP	0	5%	1/16W
R882	1-218-903-11	RES,CHIP	220K	0 50%	1/16W
R883	1-216-841-11	METAL CHIP	47K	5%	1/16W
R884	1-216-845-11	METAL CHIP	100K	5%	1/16W
R885	1-216-845-11	METAL CHIP	100K	5%	1/16W
		(TRV93)			
R887	1-216-849-11	METAL CHIP	220K	5%	1/16W
R888	1-216-845-11	METAL CHIP	100K	5%	1/16W
R889	1-216-841-11	METAL CHIP	47K	5%	1/16W
		(TRV93)			
R890	1-216-845-11	METAL CHIP	100K	5%	1/16W
R891	1-218-895-11	RES,CHIP	100K	0 50%	1/16W
R892	1-218-903-11	RES,CHIP	220K	0 50%	1/16W
R893	1-216-835-11	METAL CHIP	15K	5%	1/16W
R894	1-216-861-11	METAL CHIP	2 2M	5%	1/16W
		(TRV93)			
R895	1-216-837-11	METAL CHIP	22K	5%	1/16W
R896	1-218-903-11	RES,CHIP	220K	0 50%	1/16W
R897	1-218-891-11	RES,CHIP	68K	0 50%	1/16W
R898	1-218-895-11	RES,CHIP	100K	0 50%	1/16W
		(TRV93)			
R899	1-218-883-11	RES,CHIP	33K	0 50%	1/16W
		(TRV93)			
R900	1-218-895-11	RES,CHIP	100K	0 50%	1/16W
R901	1-218-887-11	RES,CHIP	47K	0 50%	1/16W
R902	1-216-864-11	METAL CHIP	0	5%	1/16W
R903	1-216-845-11	METAL CHIP	100K	5%	1/16W
R904	1-216-849-11	METAL CHIP	220K	5%	1/16W
R905	1-218-901-11	RES,CHIP	180K	0 50%	1/16W
R906	1-216-833-11	METAL CHIP	10K	5%	1/16W
R907	1-218-903-11	RES,CHIP	220K	0 50%	1/16W
R908	1-216-841-11	METAL CHIP	47K	5%	1/16W
R910	1-216-833-11	METAL CHIP	10K	5%	1/16W
R911	1-218-883-11	RES,CHIP	33K	0 50%	1/16W
R912	1-218-879-11	RES,CHIP	22K	0 50%	1/16W
R913	1-216-857-11	METAL CHIP	1M	5%	1/16W

Ref. No	Part No	Description			Remark
R914	1-216-811-11	METAL CHIP	150	5%	1/16W
R915	1-216-853-11	METAL CHIP	470K	5%	1/16W
R916	1-216-864-11	METAL CHIP	0	5%	1/16W
		(TRV93)			
R917	1-216-864-11	METAL CHIP	0	5%	1/16W
		(EXCEPT TRV93)			
R918	1-216-849-11	METAL CHIP	220K	5%	1/16W
R921	1-216-296-91	SHORT	0		
R922	1-216-296-91	SHORT	0		
R923	1-216-296-91	SHORT	0		
R924	1-216-849-11	METAL CHIP	220K	5%	1/16W
R932	1-216-841-11	METAL CHIP	47K	5%	1/16W
R933	1-216-821-11	METAL CHIP	1K	5%	1/16W
R934	1-216-821-11	METAL CHIP	1K	5%	1/16W
R935	1-216-821-11	METAL CHIP	1K	5%	1/16W
R936	1-216-821-11	METAL CHIP	1K	5%	1/16W
R937	1-216-821-11	METAL CHIP	1K	5%	1/16W
R938	1-216-821-11	METAL CHIP	1K	5%	1/16W
R939	1-216-821-11	METAL CHIP	1K	5%	1/16W
R940	1-216-819-11	METAL CHIP	680	5%	1/16W
R941	1-216-821-11	METAL CHIP	1K	5%	1/16W
R942	1-216-821-11	METAL CHIP	1K	5%	1/16W
R943	1-216-029-00	METAL CHIP	150	5%	1/10W

< TRANSFORMER >

△ T801 1-429-565-21 TRANSFORMER, CONVERTER

1-658-213-11 FP-355 FLEXIBLE PRINT BOARD

(Ref No 10,000 Series)

< DIODE >

D001 8-719-988-42 DIODE GL453S

1-658-214-11 FP-356 FLEXIBLE BOARD

(Ref No 10,000 Series)

3-965-551-01 HOLDER (S), SENSOR

3-965-552-01 HOLDER (T), SENSOR

< HALL ELEMENT >

H001 8-719-033-37 ELEMENT, HALL HW-105C

H002 8-719-033-37 ELEMENT, HALL HW-105C

< TRANSISTOR >

Q001 8-729-907-25 PHOTO TRANSISTOR PT4850F

Q002 8-729-907-25 PHOTO TRANSISTOR PT4850F

< SWITCH >

S001 1-692-614-11 SWITCH, PUSH (3 KEY)

(Hi8MP,ME/MP,REC PROOF)

S002 1-572-688-11 SWITCH, PUSH (1 KEY)(C C LOCK)

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Ref No	Part No	Description	Remark
		FP-433 FLEXIBLE BOARD	

		(Ref No 10,000 Series)	
		< CAPACITOR >	
C9001	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V	
C9002	1-164-005-11	CERAMIC CHIP 0 47uF 25V	
C9003	1-164-360-11	CERAMIC CHIP 0 1uF 16V	
		< DIODE >	
D9001	8-719-038-33	DIODE THS120-TE85L	
		< RESISTOR >	
R9001	1-216-789-11	METAL CHIP 2 2 5% 1/16W	
R9002	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R9003	1-216-857-11	METAL CHIP 1M 5% 1/16W	

A-7073-439-A LB-54 BOARD, COMPLETE (TRV93)

(Ref No 10,000 Series)

		< CAPACITOR >	
C5351	1-113-642-11	TANTAL CHIP 47uF 20% 10V	
C5352	1-115-566-11	CERAMIC CHIP 4 7uF 10% 10V	
C5353	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C5354	1-163-020-00	CERAMIC CHIP 0 0082uF 10% 50V	
C5355	1-163-020-00	CERAMIC CHIP 0 0082uF 10% 50V	
C5356	1-163-020-00	CERAMIC CHIP 0 0082uF 10% 50V	
		< CONNECTOR >	
CN5351	1-784-564-11	CONNECTOR, BOARD TO BOARD 12P	
		< COIL >	
L5351	1-412-031-11	INDUCTOR CHIP 47uH	
L5352	1-412-029-11	INDUCTOR CHIP 10uH	
		< FLUORECENT INDICATOR >	
△ ND5351	1-517-414-51	FLUORESCENT TUBE (0 55 INCH)	
		< TRANSISTOR >	
Q5351	8-729-039-24	TRANSISTOR FX216-TL1	
		< RESISTOR >	
R5351	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		< TRANSFORMER >	
△ T5351	1-426-848-51	TRANSFORMER, INVERTER	

Ref No	Part No	Description	Remark
		MA-311(VMMI) BOARD, COMPLETE (TRV35)	

		(Ref No 3,000 Series)	
		A-7073-430-A MA-312(VHI) BOARD, COMPLETE	

		(TRV85/TRV815)	
		A-7073-455-A MA-312(VHIB) BOARD, COMPLETE (TRV93)	

		(Ref No 9,000 Series)	
		A-7073-402-A MA-331(VMM) BOARD, COMPLETE	

		(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
		A-7073-411-A MA-331(VHI) BOARD, COMPLETE	

		(TRV65/TRV65PK/TRV615)	
		A-7073-451-A MA-331(VMM0) BOARD, COMPLETE (TRV35E)	

		(Ref No. 4,000 Series)	

< CAPACITOR >

C301	1-107-686-11	TANTAL CHIP 4 7uF 20% 16V	
		(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C302	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C303	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C304	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C305	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C306	1-135-259-11	TANTAL CHIP 10uF 20% 6 3V	
C321	1-107-725-11	CERAMIC CHIP 0 1uF 10% 16V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C322	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C323	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C324	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C325	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C326	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C327	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C328	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C329	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C330	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C331	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C332	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C333	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C334	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C335	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	

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Ref No	Part No	Description	Remark
C336	1-162-927-11	CERAMIC CHIP 100PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C337	1-135-259-11	TANTAL CHIP 10uF 20% 6.3V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C338	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C339	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C340	1-162-927-11	CERAMIC CHIP 100PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C341	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C342	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C343	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C344	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C345	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C346	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C348	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C349	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C350	1-135-259-11	TANTAL CHIP 10uF 20% 6.3V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C351	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C352	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C353	1-162-927-11	CERAMIC CHIP 100PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C354	1-110-563-11	CERAMIC CHIP 0.068uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C355	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C356	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C357	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C358	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C359	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C360	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C361	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C362	1-164-677-11	CERAMIC CHIP 0.033uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C363	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C364	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C365	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C366	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C367	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C368	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	

Ref No	Part No	Description	Remark
C369	1-162-962-11	CERAMIC CHIP 470PF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C370	1-162-962-11	CERAMIC CHIP 470PF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C371	1-164-346-11	CERAMIC CHIP 1uF 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C372	1-164-346-11	CERAMIC CHIP 1uF 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C373	1-164-156-11	CERAMIC CHIP 0.1uF 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C376	1-135-259-11	TANTAL CHIP 10uF 20% 6.3V	
C377	1-162-966-11	CERAMIC CHIP 0.0022uF 50V	
C378	1-165-128-11	CERAMIC CHIP 0.22uF 16V	
< CONNECTOR >			
* CN301	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P	
* CN302	1-695-320-21	PIN, CONNECTOR (1.5MM)(SMD) 2P (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
CN303	1-779-334-11	CONNECTOR, FFC/FPC 20P	
< DIODE >			
D301	8-719-061-86	DIODE DCR2810 (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
D302	8-749-060-65	DIODE DCC3810 (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
D303	8-719-061-82	DIODE TLSU1002(TPX1,SONY)	
D305	8-719-404-49	DIODE MA111-TX	
D309	8-719-067-44	DIODE CL-310IRS-X-T (TRV35E)	
D322	8-719-420-14	DIODE MA8082-TX	
D323	8-719-404-49	DIODE MA111-TX	
< FUSE >			
△ F301	1-533-874-11	FUSE, MICRO 200mA, 24V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
< IC >			
IC301	8-749-012-83	IC RS-180-T	
IC321	8-759-339-63	IC NJM2118V-TE2 (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC322	8-759-494-54	IC AN2900FH-EB (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
< JACK >			
J301	1-568-027-11	JACK, SMALL TYPE (MIC PLUG IN POWER) (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
J301	1-691-737-11	JACK (SMALL TYPE)(HEADPHONE) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
< COIL >			
L301	1-216-295-91	SHORT 0 (TRV35E)	
L301	1-414-754-11	INDUCTOR 10uH (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
< TRANSISTOR >			
Q301	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
Q301	8-729-422-51	TRANSISTOR UN5110-QRS-TX (TRV35E)	

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Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
Q302	8-729-122-63	TRANSISTOR 2SA1226-T1E4 (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R335	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
Q303	8-729-140-75	TRANSISTOR 2SD999-T1-CLCK (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)		R336	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
Q304	8-729-402-42	TRANSISTOR UN5213-TX					
Q305	8-729-402-42	TRANSISTOR UN5213-TX (TRV35E)		R337	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
Q321	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R338	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
Q322	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R339	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
< RESISTOR >				R340	1-216-825-11	METAL CHIP 2 2K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R301	1-216-823-11	METAL CHIP 1 5K 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R341	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R302	1-216-810-11	METAL CHIP 120 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R342	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R303	1-216-825-11	METAL CHIP 2 2K 5% 1/16W (TRV35E)		R343	1-216-829-11	METAL CHIP 4 7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R304	1-216-309-00	METAL CHIP 5 6 5% 1/10W (TRV35E)		R344	1-216-833-11	METAL CHIP 10K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R304	1-216-311-00	METAL CHIP 6 8 5% 1/10W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R345	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R305	1-216-302-00	METAL CHIP 2 7 5% 1/10W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)		R346	1-216-825-11	METAL CHIP 2 2K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R306	1-216-864-11	METAL CHIP 0 5% 1/16W		R347	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R308	1-216-837-11	METAL CHIP 22K 5% 1/16W (TRV93)		R348	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R309	1-216-847-11	METAL CHIP 150K 5% 1/16W (TRV93)		R349	1-216-832-11	METAL CHIP 8 2K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R310	1-216-824-11	METAL CHIP 1 8K 5% 1/16W		R350	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R311	1-216-805-11	METAL CHIP 47 5% 1/16W		R351	1-216-838-11	METAL CHIP 27K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R312	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R352	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R314	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV35E)		R353	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R315	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R354	1-216-829-11	METAL CHIP 4 7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R321	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R355	1-216-833-11	METAL CHIP 10K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R322	1-216-864-11	METAL CHIP 0 5% 1/16W		R356	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R323	1-216-864-11	METAL CHIP 0 5% 1/16W					
R324	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R357	1-216-832-11	METAL CHIP 8 2K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R325	1-216-864-11	METAL CHIP 0 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R358	1-216-838-11	METAL CHIP 27K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R326	1-216-825-11	METAL CHIP 2 2K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R359	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R327	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R360	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R328	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R361	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R329	1-216-829-11	METAL CHIP 4 7K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R362	1-216-835-11	METAL CHIP 15K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R330	1-216-830-11	METAL CHIP 5 6K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R363	1-216-830-11	METAL CHIP 5 6K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R331	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R364	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R332	1-216-809-11	METAL CHIP 100 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R365	1-216-836-11	METAL CHIP 18K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R333	1-216-838-11	METAL CHIP 27K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R366	1-216-839-11	METAL CHIP 33K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R334	1-216-838-11	METAL CHIP 27K 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)					

Ref No	Part No	Description	Remark
R367	1-216-818-11	METAL CHIP 560 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R368	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
< SWITCH >			
S301	1-692-605-11	SWITCH, SLIDE (VIDEO LIGHT (ON/AUTO/OFF)(TRV93)	
S302	1-771-040-21	SWITCH, PUSH (POWER (VTR/PLAYER))	
S303	1-771-039-11	SWITCH, PUSH (POWER (CAMERA))	
A-7073-413-A PD-92(SN6) BOARD, COMPLETE *****~*****~			
(TRV35/TRV65/TRV65PK/TRV615)			
A-7073-415-A PD-92(CN6) BOARD, COMPLETE *****~*****~			
(TRV15/TRV15PK/TRV25/TRV25PK/TRV215)			
A-7073-452-A PD-92(SP6) BOARD, COMPLETE (TRV35E) *****~*****~			
A-7073-460-A PD-92(CP6) BOARD, COMPLETE *****~*****~			
(TRV15E/TRV15EP) (Ref No 10,000 Series)			
< CAPACITOR >			
C5501	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5502	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5503	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C5504	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C5505	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C5506	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V	
C5507	1-104-851-11	TANTAL CHIP 10uF 20% 10V	
C5508	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5509	1-135-180-21	TANTALUM CHIP 3 3uF 20% 6 3V	
C5511	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C5512	1-104-851-11	TANTAL CHIP 10uF 20% 10V	
C5513	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5514	1-110-501-11	CERAMIC CHIP 0 33uF 10% 16V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
C5514	1-115-339-11	CERAMIC CHIP 0 1uF 10% 50V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5515	1-110-501-11	CERAMIC CHIP 0 33uF 10% 16V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
C5515	1-115-339-11	CERAMIC CHIP 0 1uF 10% 50V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5516	1-110-501-11	CERAMIC CHIP 0 33uF 10% 16V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
C5516	1-115-339-11	CERAMIC CHIP 0 1uF 10% 50V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5517	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5518	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C5519	1-104-851-11	TANTAL CHIP 10uF 20% 10V	
C5520	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5601	1-135-259-11	TANTAL CHIP 10uF 20% 6 3V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
C5602	1-107-687-11	TANTAL CHIP 3 3uF 20% 20V	
C5603	1-110-501-11	CERAMIC CHIP 0 33uF 10% 16V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	

Ref No	Part No	Description	Remark
C5603	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5604	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5605	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5607	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V	
C5608	1-164-357-11	CERAMIC CHIP 1000PF 5% 50V	
C5610	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C5612	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	
C5614	1-162-959-11	CERAMIC CHIP 330PF 5% 50V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5615	1-162-957-11	CERAMIC CHIP 220PF 5% 50V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5616	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C5618	1-113-994-11	TANTAL CHIP 6 8uF 20% 16V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5619	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
C5620	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V	
C5621	1-135-177-21	TANTALUM CHIP 1uF 20% 20V	
C5622	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C5623	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
C5624	1-107-688-11	TANTAL CHIP 1 5uF 20% 10V	
C5625	1-107-688-11	TANTAL CHIP 1 5uF 20% 10V	
C5633	1-162-967-11	CERAMIC CHIP 0 0033uF 10% 50V	
C5701	1-104-911-11	TANTAL CHIP 33uF 20% 10V	
C5702	1-164-346-11	CERAMIC CHIP 1uF 10% 16V	
C5703	1-164-664-11	CERAMIC CHIP 0 033uF 10% 50V	
C5704	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V	
△ C5705	1-113-521-11	CERAMIC CHIP 12PF 10% 3KV	
C5706	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
C5801	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	
< CONNECTOR >			
* CN5501	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P	
CN5601	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P	
CN5701	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P	
CN5801	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P	
CN5802	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P	
CN5803	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P	
CN5804	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P	
CN5805	1-766-336-21	CONNECTOR, FFC/FPC 6P	
< DIODE >			
D5603	8-713-102-80	DIODE 1T369-01-T8A	
D5604	8-719-976-96	DIODE MA8047-H-TX	
D5605	8-713-102-80	DIODE 1T369-01-T8A	
D5703	8-719-058-86	DIODE PG1101H-TR	
D5704	8-719-404-49	DIODE MA111-TX	
< IC >			
IC5501	8-759-364-05	IC M62376GP-65AD	
IC5502	8-759-486-77	IC IR3Y37M4	
IC5601	8-759-491-12	IC CM7017L2-T4 (TRV15/TRV15E/TRV15EP/TRV25/TRV215 US)	
IC5601	8-759-495-00	IC LZ9GH184 (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
IC5601	8-759-530-20	IC CM7017L3-T4 (TRV15PK/TRV25PK/TRV215 CND)	

The components identified by
mark △ or dotted line with mark
△ are critical for safety
Replace only with part number
specified

Les composants identifiés par une
marque △ sont critiques pour la
sécurité
Ne les remplacer que par une
pièce portant le numéro spécifié

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
IC5602	8-759-327-01	IC NJM062V(Te2)		R5605	1-216-864-11	METAL CHIP 0 5% 1/16W	
IC5701	8-759-075-70	IC TA75S393F-TE85R				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
IC5801	8-759-494-53	IC BU9729K-E2		R5607	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< COIL >				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
L5501	1-414-754-11	INDUCTOR 10uH		R5608	1-216-864-11	METAL CHIP 0 5% 1/16W	
L5502	1-414-754-11	INDUCTOR 10uH				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
L5503	1-414-754-11	INDUCTOR 10uH		R5610	1-216-842-11	METAL CHIP 56K 5% 1/16W	
L5601	1-414-754-11	INDUCTOR 10uH				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
L5603	1-414-754-11	INDUCTOR 10uH		R5610	1-216-845-11	METAL CHIP 100K 5% 1/16W	
		(TRV35/TRV35E/TRV65/TRV65PK/TRV615)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
L5604	1-414-754-11	INDUCTOR 10uH		R5612	1-216-833-11	METAL CHIP 10K 5% 1/16W	
L5605	1-412-957-11	INDUCTOR 33uH		R5613	1-216-841-11	METAL CHIP 47K 5% 1/16W	
L5701	1-409-536-41	COIL, CHOKE 150uH		R5615	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		< TRANSISTOR >		R5616	1-216-857-11	METAL CHIP 1M 5% 1/16W	
Q5501	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX		R5617	1-216-833-11	METAL CHIP 10K 5% 1/16W	
Q5601	8-729-402-42	TRANSISTOR UN5213-TX				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
Q5602	8-729-402-42	TRANSISTOR UN5213-TX		R5622	1-216-864-11	METAL CHIP 0 5% 1/16W	
Q5604	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX		R5625	1-218-891-11	RES,CHIP 68K 0 50% 1/16W	
		(TRV35/TRV35E/TRV65/TRV65PK/TRV615)				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
Q5605	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX		R5625	1-218-895-11	RES,CHIP 100K 0 50% 1/16W	
		(TRV35/TRV35E/TRV65/TRV65PK/TRV615)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
Q5606	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX		R5627	1-218-895-11	RES,CHIP 100K 0 50% 1/16W	
Q5607	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
Q5608	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX		R5627	1-218-901-11	RES,CHIP 180K 0 50% 1/16W	
Q5701	8-729-039-43	TRANSISTOR FP216-TL				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
Q5702	8-729-015-74	TRANSISTOR UN5111-TX		R5628	1-216-864-11	METAL CHIP 0 5% 1/16W	
		< RESISTOR >		R5629	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R5501	1-216-840-11	METAL CHIP 39K 5% 1/16W		R5630	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R5505	1-216-841-11	METAL CHIP 47K 5% 1/16W		R5632	1-216-864-11	METAL CHIP 0 5% 1/16W	
R5512	1-216-837-11	METAL CHIP 22K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5513	1-216-834-11	METAL CHIP 12K 5% 1/16W		R5636	1-216-864-11	METAL CHIP 0 5% 1/16W	
R5516	1-216-837-11	METAL CHIP 22K 5% 1/16W				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R5517	1-216-835-11	METAL CHIP 15K 5% 1/16W		R5635	1-216-829-11	METAL CHIP 4 7K 5% 1/16W	
R5518	1-216-839-11	METAL CHIP 33K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5520	1-216-852-11	METAL CHIP 390K 5% 1/16W		R5636	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R5521	1-216-834-11	METAL CHIP 12K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5522	1-216-840-11	METAL CHIP 39K 5% 1/16W		R5637	1-216-864-11	METAL CHIP 0 5% 1/16W	
		(TRV35/TRV35E/TRV65/TRV65PK/TRV615)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5522	1-216-843-11	METAL CHIP 68K 5% 1/16W		R5638	1-216-833-11	METAL CHIP 10K 5% 1/16W	
		(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5528	1-218-895-11	RES,CHIP 100K 0 50% 1/16W		R5639	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R5531	1-216-821-11	METAL CHIP 1K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5532	1-216-841-11	METAL CHIP 47K 5% 1/16W		R5640	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R5533	1-216-864-11	METAL CHIP 0 5% 1/16W		R5641	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R5537	1-216-823-11	METAL CHIP 1 5K 5% 1/16W		R5642	1-216-829-11	METAL CHIP 4 7K 5% 1/16W	
		(TRV15/TRV15PK/TRV25/TRV25PK/TRV215)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5537	1-216-828-11	METAL CHIP 3 9K 5% 1/16W		R5643	1-216-845-11	METAL CHIP 100K 5% 1/16W	
		(TRV15E/TRV15EP)				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5537	1-216-830-11	METAL CHIP 5 6K 5% 1/16W		R5644	1-216-839-11	METAL CHIP 33K 5% 1/16W	
		(TRV35/TRV65/TRV65PK/TRV615)		R5645	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R5537	1-216-832-11	METAL CHIP 8 2K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
		(TRV35E)		R5646	1-216-844-11	METAL CHIP 82K 5% 1/16W	
R5541	1-216-825-11	METAL CHIP 2 2K 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
R5542	1-216-824-11	METAL CHIP 1 8K 5% 1/16W		R5647	1-216-864-11	METAL CHIP 0 5% 1/16W	
R5544	1-216-821-11	METAL CHIP 1K 5% 1/16W				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R5602	1-216-864-11	METAL CHIP 0 5% 1/16W		R5648	1-216-864-11	METAL CHIP 0 5% 1/16W	
		(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)				(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
R5603	1-216-864-11	METAL CHIP 0 5% 1/16W		R5651	1-218-883-11	RES,CHIP 33K 0 50% 1/16W	
R5604	1-216-864-11	METAL CHIP 0 5% 1/16W				(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	
				R5652	1-216-864-11	METAL CHIP 0 5% 1/16W	
						(TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
				R5652	1-218-879-11	RES,CHIP 22K 0 50% 1/16W	
						(TRV35/TRV35E/TRV65/TRV65PK/TRV615)	

Ref_No	Part No	Description			Remark
R5653	1-218-883-11	RES,CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	33K	0 50%	1/16W
R5654	1-218-879-11	RES,CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	22K	0 50%	1/16W
R5657	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5658	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5659	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5660	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5661	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5663	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5664	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5665	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5666	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5667	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5668	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5669	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5670	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5671	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5672	1-216-849-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	220K	5%	1/16W
R5673	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5674	1-216-864-11	METAL CHIP (TRV35/TRV35PK/TRV35E/TRV65/TRV65PK/TRV315/TRV615)	0	5%	1/16W
R5676	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5678	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5679	1-216-805-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	47	5%	1/16W
R5680	1-216-805-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	47	5%	1/16W
R5681	1-216-805-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	47	5%	1/16W
R5682	1-216-805-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	47	5%	1/16W
R5683	1-216-805-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	47	5%	1/16W
R5684	1-216-805-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	47	5%	1/16W
R5685	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5686	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5688	1-216-864-11	METAL CHIP	0	5%	1/16W
R5692	1-216-837-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	22K	5%	1/16W
R5692	1-216-841-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	47K	5%	1/16W
R5693	1-216-848-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	180K	5%	1/16W

Ref No	Part No	Description			Remark
R5693	1-216-853-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	470K	5%	1/16W
R5694	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5695	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5696	1-216-864-11	METAL CHIP (TRV35/TRV35E/TRV65/TRV65PK/TRV615)	0	5%	1/16W
R5697	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5698	1-216-864-11	METAL CHIP (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	0	5%	1/16W
R5703	1-216-055-00	METAL CHIP	1 8K	5%	1/10W
R5704	1-216-055-00	METAL CHIP	1 8K	5%	1/10W
R5705	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5706	1-216-831-11	METAL CHIP	6 8K	5%	1/16W
R5707	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5708	1-216-810-11	METAL CHIP	120	5%	1/16W
R5709	1-216-817-11	METAL CHIP	470	5%	1/16W
R5710	1-216-864-11	METAL CHIP	0	5%	1/16W
R5801	1-216-823-11	METAL CHIP	1 5K	5%	1/16W
R5802	1-216-825-11	METAL CHIP	2 2K	5%	1/16W
R5803	1-216-828-11	METAL CHIP	3 9K	5%	1/16W
R5804	1-216-832-11	METAL CHIP	8 2K	5%	1/16W
R5805	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5806	1-216-822-11	METAL CHIP	1 2K	5%	1/16W
R5807	1-216-809-11	METAL CHIP	100	5%	1/16W
R5808	1-216-809-11	METAL CHIP	100	5%	1/16W
R5811	1-216-864-11	METAL CHIP	0	5%	1/16W
R5812	1-216-855-11	METAL CHIP	680K	5%	1/16W
< SWITCH >					
S5801	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)			
S5802	1-692-088-41	SWITCH, TACTILE (LID BRIGHT -)			
S5803	1-692-088-41	SWITCH, TACTILE (VOLUME +)			
S5804	1-692-088-41	SWITCH, TACTILE (VOLUME -)			
< TRANSFORMER >					
△T5701	1-429-547-31	TRANSFORMER, INVERTER			
A-7073-432-A	PD-93(CN3 5) BOARD, COMPLETE *****~*****~***** (TRV85/TRV815)				
A-7073-457-A	PD-93(SN3) BOARD, COMPLETE (TRV93) *****~*****~***** (Ref No 10,000 Series)				
< CAPACITOR >					
C4501	1-107-826-11	CERAMIC CHIP	0 1uF	10%	16V
C4502	1-107-826-11	CERAMIC CHIP	0 1uF	10%	16V
C4503	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V
C4504	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V
C4505	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V
C4506	1-164-004-11	CERAMIC CHIP	0 1uF	10%	25V
C4507	1-104-851-11	TANTAL CHIP	10uF	20%	10V
C4508	1-107-826-11	CERAMIC CHIP	0 1uF	10%	16V
C4509	1-135-180-21	TANTALUM CHIP	3 3uF	20%	6 3V
C4511	1-107-682-11	CERAMIC CHIP	1uF	10%	16V

The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety
Replace only with part number specified

Les composants identifiés par une
marque  sont critiques pour la
sécurité
Ne les remplacer que par une
pièce portant le numéro spécifié

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
C4512	1-104-851-11	TANTAL CHIP 10uF 20%	10V	< DIODE >			
C4513	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	D4603	8-713-102-80	DIODE 1T369-01-T8A	
C4514	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V	D4604	8-719-976-96	DIODE MA8047-H-TX	
C4515	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V	D4605	8-713-102-80	DIODE 1T369-01-T8A	
C4516	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V	D4704	8-719-404-49	DIODE MA111-TX	
C4517	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	< IC >			
C4518	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	IC4501	8-759-364-05	IC M62376GP-65AD	
C4519	1-104-851-11	TANTAL CHIP 10uF 20%	10V	IC4502	8-759-486-77	IC IR3Y37M4	
C4520	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	IC4601	8-759-491-15	IC LZ9GH164 (TRV93)	
C4602	1-107-687-11	TANTAL CHIP 3 3uF 20%	20V	IC4601	8-759-530-20	IC CM7017L3-T4 (TRV85/TRV815)	
C4603	1-110-501-11	CERAMIC CHIP 0 33uF 10%	16V (TRV85/TRV815)	IC4602	8-759-327-01	IC NJM062V(Te2)	
C4603	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V (TRV93)	IC4701	8-759-075-70	IC TA75S393F-TE85R	
C4604	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	IC4801	8-759-494-53	IC BU9729K-E2	
C4605	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	< COIL >			
C4607	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V	L4501	1-414-754-11	INDUCTOR 10uH	
C4608	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V	L4502	1-414-754-11	INDUCTOR 10uH	
C4610	1-162-926-11	CERAMIC CHIP 82PF 5%	50V	L4503	1-414-754-11	INDUCTOR 10uH	
C4612	1-162-926-11	CERAMIC CHIP 82PF 5%	50V	L4601	1-414-754-11	INDUCTOR 10uH (TRV85/TRV815)	
C4614	1-162-959-11	CERAMIC CHIP 330PF 5%	50V (TRV93)	L4603	1-414-754-11	INDUCTOR 10uH	
C4615	1-162-957-11	CERAMIC CHIP 220PF 5%	50V (TRV93)	L4604	1-414-754-11	INDUCTOR 10uH	
C4616	1-107-682-11	CERAMIC CHIP 1uF 10%	16V	L4605	1-412-951-11	INDUCTOR 10uH (TRV85/TRV815)	
C4618	1-113-994-11	TANTAL CHIP 6 8uF 20%	16V (TRV93)	L4605	1-412-954-11	INDUCTOR 18uH (TRV93)	
C4619	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V (TRV93)	L4701	1-409-536-41	COIL, CHOKE 150uH	
C4620	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	< TRANSISTOR >			
C4621	1-135-177-21	TANTALUM CHIP 1uF 20%	20V	Q4501	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	
C4622	1-107-682-11	CERAMIC CHIP 1uF 10%	16V	Q4601	8-729-402-42	TRANSISTOR UN5213-TX	
C4623	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	Q4602	8-729-402-42	TRANSISTOR UN5213-TX	
C4624	1-107-688-11	TANTAL CHIP 1 5uF 20%	10V	Q4604	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX (TRV93)	
C4625	1-107-688-11	TANTAL CHIP 1 5uF 20%	10V	Q4605	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
C4633	1-162-967-11	CERAMIC CHIP 0 0033uF 10%	50V	Q4606	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	
C4701	1-104-911-11	TANTAL CHIP 33uF 20%	10V	Q4607	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
C4702	1-164-346-11	CERAMIC CHIP 1uF 10%	16V	Q4608	8-729-420-24	TRANSISTOR 2SB1218A-QRS-TX	
C4703	1-164-664-11	CERAMIC CHIP 0 033uF 10%	50V	Q4701	8-729-039-43	TRANSISTOR FP216-TL	
C4704	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V	Q4702	8-729-015-74	TRANSISTOR UN5111-TX	
△ C4705	1-113-520-11	CERAMIC CHIP 10PF 10%	3KV (TRV93)	< RESISTOR >			
△ C4705	1-113-521-11	CERAMIC CHIP 12PF 10%	3KV (TRV85/TRV815)	R4501	1-216-840-11	METAL CHIP 39K 5%	1/16W
C4706	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	R4505	1-216-841-11	METAL CHIP 47K 5%	1/16W
C4801	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	R4512	1-216-837-11	METAL CHIP 22K 5%	1/16W
< CONNECTOR >				R4513	1-216-834-11	METAL CHIP 12K 5%	1/16W
* CN4501	1-573-984-11	CONNECTOR, BOARD TO BOARD 10P		R4516	1-216-837-11	METAL CHIP 22K 5%	1/16W
CN4601	1-691-362-11	CONNECTOR, FFC/FPC (ZIF) 24P		R4517	1-216-835-11	METAL CHIP 15K 5%	1/16W
CN4701	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P		R4518	1-216-839-11	METAL CHIP 33K 5%	1/16W
CN4801	1-750-360-21	CONNECTOR, FFC/FPC (ZIF) 24P		R4520	1-216-852-11	METAL CHIP 390K 5%	1/16W
CN4802	1-778-509-21	PIN, CONNECTOR (PC BOARD) 11P		R4521	1-216-834-11	METAL CHIP 12K 5%	1/16W
CN4803	1-778-508-21	PIN, CONNECTOR (PC BOARD) 6P		R4522	1-216-840-11	METAL CHIP 39K 5%	1/16W (TRV93)
CN4804	1-779-064-11	PIN, CONNECTOR (PC BOARD) 12P		R4522	1-216-843-11	METAL CHIP 68K 5%	1/16W (TRV85/TRV815)
CN4805	1-766-336-21	CONNECTOR, FFC/FPC 6P		R4528	1-218-895-11	RES,CHIP 100K 0 50%	1/16W
				R4531	1-216-821-11	METAL CHIP 1K 5%	1/16W
				R4532	1-216-841-11	METAL CHIP 47K 5%	1/16W
				R4533	1-216-864-11	METAL CHIP 0 5%	1/16W

The components identified by mark △ or dotted line with mark △ are critical for safety Replace only with part number specified	Les composants identifiés par une marque △ sont critiques pour la sécurité Ne les remplacer que par une pièce portant le numéro spécifié
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PD-93

Ref No	Part No	Description			Remark	Ref No	Part No	Description			Remark
R4534	1-216-805-11	METAL CHIP	47	5%	1/16W	R4645	1-216-844-11	METAL CHIP	82K	5%	1/16W
R4535	1-216-805-11	METAL CHIP	47	5%	1/16W						(TRV93)
R4536	1-216-805-11	METAL CHIP	47	5%	1/16W	R4646	1-216-844-11	METAL CHIP	82K	5%	1/16W
R4537	1-216-821-11	METAL CHIP	1K	5%	1/16W						(TRV93)
					(TRV85/TRV815)	R4647	1-216-864-11	METAL CHIP	0	5%	1/16W
R4537	1-216-829-11	METAL CHIP	4 7K	5%	1/16W						(TRV85/TRV815)
					(TRV93)						
R4541	1-216-825-11	METAL CHIP	2 2K	5%	1/16W	R4648	1-216-864-11	METAL CHIP	0	5%	1/16W
R4542	1-216-824-11	METAL CHIP	1 8K	5%	1/16W						(TRV85/TRV815)
R4544	1-216-821-11	METAL CHIP	1K	5%	1/16W	R4651	1-218-883-11	RES,CHIP	33K	0 50%	1/16W
R4602	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV93)
					(TRV85/TRV815)	R4652	1-216-864-11	METAL CHIP	0	5%	1/16W
R4603	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV85/TRV815)
R4604	1-216-864-11	METAL CHIP	0	5%	1/16W	R4652	1-218-879-11	RES,CHIP	22K	0 50%	1/16W
R4606	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV93)
					(TRV85/TRV815)	R4653	1-218-883-11	RES,CHIP	33K	0 50%	1/16W
R4607	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV93)
					(TRV93)	R4654	1-218-879-11	RES,CHIP	22K	0 50%	1/16W
R4608	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV93)
					(TRV93)	R4657	1-216-864-11	METAL CHIP	0	5%	1/16W
R4610	1-216-842-11	METAL CHIP	56K	5%	1/16W						(TRV93)
					(TRV85/TRV815)	R4658	1-216-864-11	METAL CHIP	0	5%	1/16W
											(TRV93)
R4610	1-216-845-11	METAL CHIP	100K	5%	1/16W	R4659	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4612	1-216-833-11	METAL CHIP	10K	5%	1/16W	R4660	1-216-864-11	METAL CHIP	0	5%	1/16W
R4613	1-216-841-11	METAL CHIP	47K	5%	1/16W						(TRV93)
R4615	1-216-839-11	METAL CHIP	33K	5%	1/16W	R4661	1-216-864-11	METAL CHIP	0	5%	1/16W
R4616	1-216-857-11	METAL CHIP	1M	5%	1/16W						(TRV93)
						R4663	1-216-864-11	METAL CHIP	0	5%	1/16W
R4617	1-216-833-11	METAL CHIP	10K	5%	1/16W						(TRV85/TRV815)
R4621	1-216-857-11	METAL CHIP	1M	5%	1/16W	R4664	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV85/TRV815)
R4622	1-216-864-11	METAL CHIP	0	5%	1/16W	R4665	1-216-864-11	METAL CHIP	0	5%	1/16W
R4625	1-218-887-11	RES,CHIP	47K	0 50%	1/16W						(TRV85/TRV815)
					(TRV85/TRV815)	R4666	1-216-864-11	METAL CHIP	0	5%	1/16W
R4625	1-218-891-11	RES,CHIP	68K	0 50%	1/16W						(TRV85/TRV815)
					(TRV93)						
R4627	1-218-897-11	RES,CHIP	120K	0 50%	1/16W	R4667	1-216-864-11	METAL CHIP	0	5%	1/16W
R4628	1-216-864-11	METAL CHIP	0	5%	1/16W						(TRV85/TRV815)
R4629	1-216-833-11	METAL CHIP	10K	5%	1/16W	R4668	1-216-864-11	METAL CHIP	0	5%	1/16W
R4630	1-216-821-11	METAL CHIP	1K	5%	1/16W						(TRV85/TRV815)
R4632	1-216-864-11	METAL CHIP	0	5%	1/16W	R4669	1-216-864-11	METAL CHIP	0	5%	1/16W
											(TRV93)
R4635	1-216-829-11	METAL CHIP	4 7K	5%	1/16W	R4670	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4636	1-216-837-11	METAL CHIP	22K	5%	1/16W	R4671	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4636	1-216-864-11	METAL CHIP	0	5%	1/16W	R4672	1-216-836-11	METAL CHIP	18K	5%	1/16W
					(TRV85/TRV815)						(TRV85/TRV815)
R4637	1-216-864-11	METAL CHIP	0	5%	1/16W	R4673	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV85/TRV815)
R4638	1-216-833-11	METAL CHIP	10K	5%	1/16W	R4674	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4639	1-216-833-11	METAL CHIP	10K	5%	1/16W	R4676	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4640	1-216-845-11	METAL CHIP	100K	5%	1/16W	R4677	1-216-864-11	METAL CHIP	0	5%	1/16W
R4641	1-216-839-11	METAL CHIP	33K	5%	1/16W						(TRV85/TRV815)
R4642	1-216-829-11	METAL CHIP	4 7K	5%	1/16W	R4678	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV85/TRV815)
R4643	1-216-841-11	METAL CHIP	47K	5%	1/16W	R4679	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV85/TRV815)						(TRV93)
R4643	1-216-842-11	METAL CHIP	56K	5%	1/16W	R4680	1-216-864-11	METAL CHIP	0	5%	1/16W
					(TRV93)						(TRV93)
R4644	1-216-839-11	METAL CHIP	33K	5%	1/16W	R4681	1-216-864-11	METAL CHIP	0	5%	1/16W
											(TRV93)

Ref No	Part No	Description	Remark
R4682	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV85/TRV815)
R4683	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV85/TRV815)
R4684	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV85/TRV815)
R4685	1-216-842-11	METAL CHIP 56K	5% 1/16W (TRV85/TRV815)
R4685	1-216-845-11	METAL CHIP 100K	5% 1/16W (TRV93)
R4686	1-216-842-11	METAL CHIP 56K	5% 1/16W (TRV85/TRV815)
R4686	1-216-845-11	METAL CHIP 100K	5% 1/16W (TRV93)
R4688	1-216-864-11	METAL CHIP 0	5% 1/16W
R4692	1-216-839-11	METAL CHIP 33K	5% 1/16W (TRV93)
R4692	1-216-842-11	METAL CHIP 56K	5% 1/16W (TRV85/TRV815)
R4693	1-216-844-11	METAL CHIP 82K	5% 1/16W (TRV85/TRV815)
R4693	1-216-850-11	METAL CHIP 270K	5% 1/16W (TRV93)
R4694	1-216-833-11	METAL CHIP 10K	5% 1/16W
R4695	1-216-833-11	METAL CHIP 10K	5% 1/16W
R4696	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV93)
R4697	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV85/TRV815)
R4698	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV85/TRV815)
R4703	1-216-055-00	METAL CHIP 1 8K	5% 1/10W
R4704	1-216-055-00	METAL CHIP 1 8K	5% 1/10W
R4705	1-216-845-11	METAL CHIP 100K	5% 1/16W
R4706	1-216-831-11	METAL CHIP 6 8K	5% 1/16W
R4707	1-216-837-11	METAL CHIP 22K	5% 1/16W
R4708	1-216-810-11	METAL CHIP 120	5% 1/16W
R4709	1-216-817-11	METAL CHIP 470	5% 1/16W
R4710	1-216-816-11	METAL CHIP 390	5% 1/16W
R4801	1-216-823-11	METAL CHIP 1 5K	5% 1/16W
R4802	1-216-825-11	METAL CHIP 2 2K	5% 1/16W
R4803	1-216-828-11	METAL CHIP 3 9K	5% 1/16W
R4804	1-216-832-11	METAL CHIP 8 2K	5% 1/16W
R4805	1-216-838-11	METAL CHIP 27K	5% 1/16W
R4806	1-216-822-11	METAL CHIP 1 2K	5% 1/16W
R4807	1-216-809-11	METAL CHIP 100	5% 1/16W
R4808	1-216-809-11	METAL CHIP 100	5% 1/16W
R4811	1-216-864-11	METAL CHIP 0	5% 1/16W
R4812	1-216-855-11	METAL CHIP 680K	5% 1/16W
< SWITCH >			
S4801	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT +)	
S4802	1-692-088-41	SWITCH, TACTILE (LCD BRIGHT -)	
S4803	1-692-088-41	SWITCH, TACTILE (VOLUME +)	
S4804	1-692-088-41	SWITCH, TACTILE (VOLUME -)	
< TRANSFORMER >			
△ T4701	1-429-507-31	TRANSFORMER, INVERTER	

Ref_No	Part No	Description	Remark
A-7073-405-A	PJ-83(M) BOARD, COMPLETE	*****	
(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			
A-7073-410-A	PJ-83(H) BOARD, COMPLETE	*****	
(TRV65/TRV65PK/TRV615) (Ref No 4,000 Series)			
A-7073-433-A	PJ-84(H) BOARD, COMPLETE	*****	
(TRV85/TRV93/TRV815) (Ref No 9,000 Series)			
< CAPACITOR >			
C101	1-110-569-11	TANTAL CHIP 47uF	20% 6 3V
< CONNECTOR >			
* CN101	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P	
< DIODE >			
D101	8-719-059-57	DIODE MAZJ082DFLSO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
D102	8-719-059-57	DIODE MAZJ082DFLSO	
D103	8-719-059-57	DIODE MAZJ082DFLSO	
D104	8-719-420-14	DIODE MA8082-TX	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
D105	8-719-059-57	DIODE MAZJ082DFLSO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
D106	8-719-059-57	DIODE MAZJ082DFLSO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
< JACK >			
J101	1-537-747-21	TERMINAL BOARD (S VIDEO/VIDEO/AUDIO)	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
J101	1-537-747-41	TERMINAL BOARD (VIDEO/AUDIO)	(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
< COIL >			
L101	1-414-072-11	INDUCTOR 1uH	
L102	1-216-295-91	SHORT 0	
L103	1-216-295-91	SHORT 0	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
L104	1-216-295-91	SHORT 0	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
< TRANSISTOR >			
Q101	8-729-101-07	TRANSISTOR 2SB798-T1-DLTK	
Q102	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
< RESISTOR >			
R101	1-216-864-11	METAL CHIP 0	5% 1/16W
R102	1-216-138-00	METAL CHIP 3 3	5% 1/8W
R103	1-216-830-11	METAL CHIP 5 6K	5% 1/16W
R104	1-216-820-11	METAL CHIP 820	5% 1/16W
R105	1-216-836-11	METAL CHIP 18K	5% 1/16W
R106	1-216-864-11	METAL CHIP 0	5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)

The components identified by mark △ or dotted line with mark △ are critical for safety
Replace only with part number specified

Les composants identifiés par une marque △ sont critiques pour la sécurité
Ne les remplacer que par une pièce portant le numéro spécifié

Ref No	Part No	Description	Remark
R107	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R108	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R109	1-216-821-11	METAL CHIP 1K 5% 1/16W	

A-7073-404-A SE-66(V) BOARD, COMPLETE

(TRV15/TRV15PK/TRV15E/TRV15EP)

A-7073-409-A SE-66(VH) BOARD, COMPLETE

(TRV65/TRV65PK/TRV615)

A-7073-443-A SE-66(VMM) BOARD, COMPLETE

(TRV25/TRV25PK/TRV35/TRV35E/TRV215)
(Ref No 4,000 Series)

A-7073-434-A SE-67(VH) BOARD, COMPLETE

(TRV85/TRV815/TRV93)
(Ref No 9,000 Series)

< CAPACITOR >

C451	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C452	1-164-004-11	CERAMIC CHIP 0 1uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C453	1-104-847-11	TANTAL CHIP 22uF 20% 4V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C454	1-104-847-11	TANTAL CHIP 22uF 20% 4V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C457	1-164-343-11	CERAMIC CHIP 0 056uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C458	1-164-343-11	CERAMIC CHIP 0 056uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C459	1-164-343-11	CERAMIC CHIP 0 056uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C460	1-110-666-11	ELECT CHIP 22uF 20% 6 3V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C461	1-164-343-11	CERAMIC CHIP 0 056uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C462	1-110-666-11	ELECT CHIP 22uF 20% 6 3V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C464	1-110-501-11	CERAMIC CHIP 0 33uF 10% 16V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C465	1-135-259-11	TANTAL CHIP 10uF 20% 6 3V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
C466	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	

< CONNECTOR >

CN451	1-691-348-11	CONNECTOR, FFC/FPC (ZIF) 10P	
CN451	1-766-646-21	CONNECTOR, FFC/FPC 10P	

< DIODE >

D451	8-719-059-57	DIODE MAZJ082DFLSO (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
D452	8-719-059-57	DIODE MAZJ082DFLSO	

Ref No	Part No	Description	Remark
		< IC >	
IC451	8-759-489-19	IC uPC6756GR-8JG-E2 (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
		< JACK >	

J451	1-695-514-11	JACK (SMALL TYPE) 1P (EARPHONES) (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
J451	1-695-514-21	JACK (SMALL TYPE) 1P (HEAD PHONES) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	

< COIL >

L451	1-414-754-11	INDUCTOR 10uH (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
L453	1-216-295-91	SHORT 0 (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
L454	1-216-295-91	SHORT 0 (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	

< RESISTOR >

R451	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R452	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R453	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R454	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R455	1-216-864-11	METAL CHIP 0 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R456	1-216-857-11	METAL CHIP 1M 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R458	1-216-833-11	METAL CHIP 10K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R459	1-216-857-11	METAL CHIP 1M 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R461	1-216-835-11	METAL CHIP 15K 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
R463	1-216-809-11	METAL CHIP 100 5% 1/16W (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	

< SENSOR >

SE451	1-803-041-31	SENSOR, ANGULAR VELOCITY (PITCH) (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
SE452	1-803-041-41	SENSOR, ANGULAR VELOCITY (YAW) (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	

A-7093-449-A VC-195(VH10U) BOARD, COMPLETE

(TRV65/TRV65PK/TRV85/TRV615/TRV815)

A-7093-450-A VC-195(VMM10U) BOARD, COMPLETE (TRV35)

A-7093-451-A VC-195(7VMMU) BOARD, COMPLETE

(TRV25/TRV25PK/TRV215)

A-7093-452-A VC-195(7VZU) BOARD, COMPLETE

(TRV15/TRV15PK)

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
A-7093-455-A	VC-195(VMM0P) BOARD, COMPLETE (TRV35E)	*****		C048	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
A-7093-456-A	VC-195(VZ0P) BOARD, COMPLETE	*****		C049	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
	(TRV15E/TRV15EP)			C050	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
A-7093-459-A	VC-195(VHCIBOU) BOARD, COMPLETE (TRV93)	*****		C052	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
	(Ref No 1,000 Series)			C053	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
< CAPACITOR >				C055	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C001	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C058	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V
C004	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C059	1-164-217-11	CERAMIC CHIP 150PF 5%	50V
C006	1-104-752-11	TANTAL CHIP 33uF 20%	6 3V	C060	1-163-809-11	CERAMIC CHIP 0 047uF 10%	25V
C007	1-104-752-11	TANTAL CHIP 33uF 20%	6 3V	C061	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C008	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	C062	1-162-926-11	CERAMIC CHIP 82PF 5%	50V
C009	1-164-217-11	CERAMIC CHIP 150PF 5%	50V	C065	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C010	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C068	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C011	1-162-926-11	CERAMIC CHIP 82PF 5%	50V	C069	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C012	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	C070	1-162-908-11	CERAMIC CHIP 3PF 0 25PF	50V
C013	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C071	1-104-752-11	TANTAL CHIP 33uF 20%	6 3V
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			C072	1-162-958-11	CERAMIC CHIP 270PF 5%	50V
C014	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C073	1-164-392-11	CERAMIC CHIP 390PF 5%	50V
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			C074	1-162-915-11	CERAMIC CHIP 10PF 0 5PF	50V
C015	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C016	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C075	1-162-959-11	CERAMIC CHIP 330PF 5%	50V
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C017	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V	C075	1-164-315-11	CERAMIC CHIP 470PF 5%	50V
C018	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C019	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V	C076	1-162-921-11	CERAMIC CHIP 33PF 5%	50V
C020	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			C078	1-162-928-11	CERAMIC CHIP 120PF 5%	50V
C021	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C079	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C022	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C023	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C080	1-162-915-11	CERAMIC CHIP 10PF 0 5PF	50V
C024	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C025	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V	C080	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)				(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C026	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C081	1-162-916-11	CERAMIC CHIP 12PF 5%	50V
C027	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C082	1-162-915-11	CERAMIC CHIP 10PF 0 5PF	50V
C028	1-135-259-11	TANTAL CHIP 10uF 20%	6 3V	C083	1-162-924-11	CERAMIC CHIP 56PF 5%	50V
C029	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(TRV15E/TRV15EP/TRV35E)		
C030	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C083	1-162-925-11	CERAMIC CHIP 68PF 5%	50V
C031	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(TRV15/TRV15PK/TRV25/TRV25PK/TRV215/TRV35)		
C032	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C083	1-162-926-11	CERAMIC CHIP 82PF 5%	50V
C033	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C034	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C085	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C035	1-162-920-11	CERAMIC CHIP 27PF 5%	50V	C086	1-115-156-11	CERAMIC CHIP 1uF	10V
C036	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C088	1-162-925-11	CERAMIC CHIP 68PF 5%	50V
C037	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C038	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C088	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C039	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C089	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C040	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			C089	1-162-923-11	CERAMIC CHIP 47PF 5%	50V
C041	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
C042	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C090	1-162-958-11	CERAMIC CHIP 270PF 5%	50V
C043	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C152	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
				C156	1-164-677-11	CERAMIC CHIP 0 033uF 10%	16V
				C157	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V
					(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		
				C158	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
				C159	1-164-346-11	CERAMIC CHIP 1uF	16V
				C160	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
				C161	1-115-467-11	CERAMIC CHIP 0 22uF 10%	10V

Ref. No.	Part No.	Description	Remark
C162	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C163	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V	
C164	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C166	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C168	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C169	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C170	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C171	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C172	1-110-501-11	CERAMIC CHIP 0.33uF 10% 16V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C173	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C174	1-164-217-11	CERAMIC CHIP 150PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C175	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C177	1-162-927-11	CERAMIC CHIP 100PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C178	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C179	1-162-919-11	CERAMIC CHIP 22PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C180	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C181	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C182	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C183	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C184	1-115-156-11	CERAMIC CHIP 1uF 10V	
C185	1-126-246-11	ELECT CHIP 220uF 20% 4V	
C187	1-126-246-11	ELECT CHIP 220uF 20% 4V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C188	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C190	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C191	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C192	1-104-852-11	TANTAL. CHIP 22uF 20% 6.3V	
C202	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C204	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C205	1-115-156-11	CERAMIC CHIP 1uF 10V	
C206	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C207	1-162-965-11	CERAMIC CHIP 0.0015uF 10% 50V	
C209	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C209	1-162-921-11	CERAMIC CHIP 33PF 5% 50V (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C210	1-162-922-11	CERAMIC CHIP 39PF 5% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C211	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C212	1-164-392-11	CERAMIC CHIP 390PF 5% 50V	
C217	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C218	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C219	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C224	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C225	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C226	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C227	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C229	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C230	1-115-156-11	CERAMIC CHIP 1uF 10V	

Ref. No.	Part No.	Description	Remark
C232	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C233	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C234	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C235	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C237	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C239	1-115-156-11	CERAMIC CHIP 1uF 10V	
C243	1-115-156-11	CERAMIC CHIP 1uF 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C244	1-115-156-11	CERAMIC CHIP 1uF 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C245	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C246	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C247	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C250	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C301	1-135-201-11	TANTALUM CHIP 10uF 20% 4V	
C302	1-135-201-11	TANTALUM CHIP 10uF 20% 4V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C307	1-135-151-21	TANTALUM CHIP 4.7uF 20% 4V	
C308	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C309	1-135-318-11	TANTAL. CHIP 33uF 20% 4V	
C310	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C312	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C313	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C316	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C317	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C318	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C319	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C320	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C321	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C322	1-163-017-00	CERAMIC CHIP 0.0047uF 5% 50V	
C323	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C325	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C326	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C327	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C328	1-164-232-11	CERAMIC CHIP 0.01uF 50V	
C329	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C332	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C331	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C333	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C334	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C335	1-115-467-11	CERAMIC CHIP 0.22uF 10% 10V	
C336	1-109-982-11	CERAMIC CHIP 1uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C337	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C338	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C339	1-109-982-11	CERAMIC CHIP 1uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C340	1-109-982-11	CERAMIC CHIP 1uF 10% 10V	
C341	1-109-982-11	CERAMIC CHIP 1uF 10% 10V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C342	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
C344	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	25V	C483	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C346	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	25V	C484	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C347	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	25V	C485	1-164-505-11	CERAMIC CHIP 2 2uF	16V
C349	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V	25V	C486	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C371	1-104-908-11	TANTAL CHIP 47uF 20% 4V	4V	C487	1-162-957-11	CERAMIC CHIP 220PF 5%	50V
C372	1-104-908-11	TANTAL CHIP 47uF 20% 4V	4V	C488	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C378	1-135-259-11	TANTAL CHIP 10uF 20% 6 3V	6 3V	C489	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C380	1-135-259-11	TANTAL CHIP 10uF 20% 6 3V	6 3V	C501	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C381	1-164-346-11	CERAMIC CHIP 1uF	16V	C502	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V
C382	1-164-227-11	CERAMIC CHIP 0 022uF 10%	25V	C503	1-162-919-11	CERAMIC CHIP 22PF 5%	50V
C383	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C504	1-162-922-11	CERAMIC CHIP 39PF 5%	50V
C384	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C506	1-115-156-11	CERAMIC CHIP 1uF	10V
C385	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C507	1-115-156-11	CERAMIC CHIP 1uF	10V
C386	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C508	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C387	1-104-847-11	TANTAL CHIP 22uF 20% 4V	4V	C509	1-135-214-21	TANTAL CHIP 4 7uF 20%	20V
C388	1-162-961-11	CERAMIC CHIP 330PF 10%	50V	C510	1-135-201-11	TANTALUM CHIP 10uF 20%	4V
C402	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	C511	1-164-232-11	CERAMIC CHIP 0 01uF	50V
C404	1-162-915-11	CERAMIC CHIP 10PF 0 5PF	50V	C512	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C405	1-162-915-11	CERAMIC CHIP 10PF 0 5PF	50V	C513	1-115-156-11	CERAMIC CHIP 1uF	10V
C406	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C514	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V
C410	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	C515	1-162-917-11	CERAMIC CHIP 15PF 5%	50V
C411	1-162-969-11	CERAMIC CHIP 0 0068uF 10%	25V	C516	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C412	1-162-969-11	CERAMIC CHIP 0 0068uF 10%	25V	C517	1-115-467-11	CERAMIC CHIP 0 22uF 10%	10V
C414	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C518	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V
C415	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C519	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C416	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C520	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C417	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C521	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C418	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C522	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C419	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C523	1-115-467-11	CERAMIC CHIP 0 22uF 10%	10V
C420	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C524	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C451	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C525	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C452	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C526	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C453	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C527	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C454	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V	C528	1-109-982-11	CERAMIC CHIP 1uF 10%	10V
C455	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V	C529	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C456	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C530	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C457	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V	C531	1-104-847-11	TANTAL CHIP 22uF 20%	4V
C458	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C532	1-162-917-11	CERAMIC CHIP 15PF 5%	50V
C459	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			
C460	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C533	1-162-917-11	CERAMIC CHIP 15PF 5%	50V
C461	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)			
C462	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V	C552	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V
C463	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C553	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C464	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C554	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C465	1-109-982-11	CERAMIC CHIP 1uF 10%	10V	C555	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V
C467	1-162-968-11	CERAMIC CHIP 0 0047uF 10%	50V	C556	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C468	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C557	1-162-962-11	CERAMIC CHIP 470PF 10%	50V
C469	1-107-826-11	CERAMIC CHIP 0 1uF 10%	16V	C558	1-115-467-11	CERAMIC CHIP 0 22uF 10%	10V
C470	1-164-227-11	CERAMIC CHIP 0 022uF 10%	25V	C559	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C471	1-164-227-11	CERAMIC CHIP 0 022uF 10%	25V	C560	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C472	1-164-156-11	CERAMIC CHIP 0 1uF	25V	C561	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C473	1-164-227-11	CERAMIC CHIP 0 022uF 10%	25V	C562	1-162-966-11	CERAMIC CHIP 0 0022uF 10%	50V
C474	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V	C563	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C475	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V	C564	1-104-752-11	TANTAL CHIP 33uF 20%	6 3V
C476	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C565	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C478	1-165-176-11	CERAMIC CHIP 0 047uF 10%	16V	C566	1-115-156-11	CERAMIC CHIP 1uF	10V
C480	1-164-227-11	CERAMIC CHIP 0 022uF 10%	25V	C567	1-162-964-11	CERAMIC CHIP 0 001uF 10%	50V
				C569	1-164-004-11	CERAMIC CHIP 0 1uF 10%	25V

Ref. No	Part No	Description	Remark	Ref. No	Part No	Description	Remark
C570	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	C767	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C571	1-104-851-11	TANTAL CHIP	10uF 20% 10V	C768	1-162-909-11	CERAMIC CHIP 4PF 0 25PF 50V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C572	1-104-851-11	TANTAL CHIP	10uF 20% 10V	C769	1-107-823-11	CERAMIC CHIP 0 47uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C605	1-135-091-00	TANTALUM CHIP	1uF 20% 16V	C770	1-107-823-11	CERAMIC CHIP 0 47uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C607	1-164-156-11	CERAMIC CHIP	0 1uF 25V	C771	1-162-921-11	CERAMIC CHIP 33PF 5% 50V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C610	1-164-156-11	CERAMIC CHIP	0 1uF 25V	C772	1-109-982-11	CERAMIC CHIP 1uF 10% 10V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C611	1-164-156-11	CERAMIC CHIP	0 1uF 25V	C773	1-162-922-11	CERAMIC CHIP 39PF 5% 50V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C612	1-119-749-91	TANTAL CHIP	33uF 20% 4V	C774	1-109-982-11	CERAMIC CHIP 1uF 10% 10V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C613	1-104-851-11	TANTAL CHIP	10uF 20% 10V	C775	1-107-826-11	CERAMIC CHIP 0 1uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C615	1-164-156-11	CERAMIC CHIP	0 1uF 25V	C776	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C616	1-164-156-11	CERAMIC CHIP	0 1uF 25V	C777	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C617	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	C778	1-162-970-11	CERAMIC CHIP 0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C618	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	C781	1-104-847-11	TANTAL CHIP 22uF 20% 4V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C619	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	< CONNECTOR >			
C620	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	CN001	1-691-354-21	CONNECTOR, FFC/FPC (ZIF) 16P	
C621	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	CN001	1-766-677-21	CONNECTOR, FFC/FPC 16P	
C622	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	CN501	1-779-332-11	CONNECTOR, FFC/FPC 16P	
C623	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	CN551	1-766-353-21	CONNECTOR, FFC/TRVFC 23P	
C624	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V	CN901	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P	
C625	1-164-156-11	CERAMIC CHIP	0 1uF 25V	CN901	1-766-644-21	CONNECTOR, FFC/FPC 8P	
C626	1-164-156-11	CERAMIC CHIP	0 1uF 25V	CN902	1-766-673-21	CONNECTOR, FFC/FPC 12P	
C627	1-164-227-11	CERAMIC CHIP	0 022uF 10% 25V	CN903	1-691-361-11	CONNECTOR, FFC/FPC (ZIF) 23P	
C628	1-162-919-11	CERAMIC CHIP	22PF 5% 50V	CN903	1-766-353-21	CONNECTOR, FFC/FPC 23P	
C629	1-162-917-11	CERAMIC CHIP	15PF 5% 50V	CN904	1-691-374-11	CONNECTOR, FFC/FPC 10P	
C630	1-164-156-11	CERAMIC CHIP	0 1uF 25V	CN905	1-691-348-11	CONNECTOR, FFC/FPC (ZIF) 10P	
C634	1-164-156-11	CERAMIC CHIP	0 1uF 25V (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN905	1-766-646-21	CONNECTOR, FFC/FPC 10P	
C636	1-164-156-11	CERAMIC CHIP	0 1uF 25V	CN906	1-691-350-21	CONNECTOR, FFC/FPC (ZIF) 12P	
C637	1-162-964-11	CERAMIC CHIP	0 001uF 10% 50V	CN906	1-766-673-21	CONNECTOR, FFC/FPC 12P	
C751	1-135-201-11	TANTALUM CHIP	10uF 20% 4V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN907	1-766-346-21	CONNECTOR, FFC/FPC 16P	
C752	1-135-259-11	TANTAL CHIP	10uF 20% 6 3V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN908	1-691-353-21	CONNECTOR, FFC/FPC (ZIF) 15P	
C753	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN908	1-766-345-21	CONNECTOR, FFC/FPC 15P	
C754	1-107-823-11	CERAMIC CHIP	0 47uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN909	1-766-621-21	CONNECTOR, FFC/FPC 10P (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C755	1-107-823-11	CERAMIC CHIP	0 47uF 10% 16V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN910	1-766-346-21	CONNECTOR, FFC/FPC 16P	
C756	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN911	1-778-637-21	CONNECTOR, FFC/FPC (ZIF) 50P	
C757	1-135-201-11	TANTALUM CHIP	10uF 20% 4V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN912	1-691-354-21	CONNECTOR, FFC/TRVFC (ZIF) 16P	
C758	1-109-982-11	CERAMIC CHIP	1uF 10% 10V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	CN914	1-691-542-21	CONNECTOR, BOARD TO BOARD 48P	
C759	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	< DIODE >			
C760	1-135-181-21	TANTALUM CHIP	4 7uF 20% 6 3V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	D002	8-719-404-49	DIODE MA111-TX (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
C761	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	D201	8-719-055-86	DIODE KV1470TL1-3	
C762	1-164-668-11	CERAMIC CHIP	510PF 5% 50V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	D202	8-719-055-86	DIODE KV1470TL1-3	
C763	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	D371	8-719-404-49	DIODE MA111-TX	
C764	1-135-259-11	TANTAL CHIP	10uF 20% 6 3V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	D502	8-713-102-28	DIODE 1T379-04-T8A	
C765	1-162-970-11	CERAMIC CHIP	0 01uF 10% 25V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)				
C766	1-109-982-11	CERAMIC CHIP	1uF 10% 10V (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)				

Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
D551	8-719-404-49	DIODE MA111-TX		IC602	8-759-424-79	IC S-8423YFS-T2	
D601	8-719-421-27	DIODE MA728-TX		IC603	8-759-059-05	IC TL1596CPW-ELM1000	
D602	8-719-421-27	DIODE MA728-TX		IC604	8-759-494-75	IC S579C14PZ-8500-TEB	
D604	8-719-404-49	DIODE MA111-TX		IC751	8-759-498-52	IC LA9511W-TBM	
D608	8-719-404-49	DIODE MA111-TX				(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
D609	8-719-049-09	DIODE 1SS367-T3SONY				< COIL >	
D610	8-719-421-27	DIODE MA728-TX		L001	1-414-406-11	INDUCTOR 220uH	
D910	8-719-059-57	DIODE MAZJ082DFLSO		L002	1-412-952-11	INDUCTOR 12uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L003	1-414-406-11	INDUCTOR 220uH	
D911	8-719-420-14	DIODE MA8082-TX		L004	1-414-754-11	INDUCTOR 10uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L005	1-412-948-11	INDUCTOR 5 6uH	
		< FERRITE BEAD >		L006	1-412-963-11	INDUCTOR 100uH	
FB001	1-414-229-11	FERRITE OUH		L008	1-412-280-31	INDUCTOR 330uH	
FB002	1-414-229-11	FERRITE OUH		L009	1-410-656-11	INDUCTOR CHIP 150uH	
FB003	1-414-229-11	FERRITE OUH		L010	1-410-657-21	INDUCTOR CHIP 180uH	
FB004	1-414-229-11	FERRITE OUH		L011	1-412-956-21	INDUCTOR 27uH	
FB151	1-414-228-11	FERRITE OUH				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
FB152	1-414-921-11	FERRITE OUH		L012	1-412-955-11	INDUCTOR 22uH	
FB201	1-414-228-11	FERRITE OUH		L013	1-412-944-11	INDUCTOR 2 7uH	
FB202	1-414-228-11	FERRITE OUH		L015	1-412-951-11	INDUCTOR 10uH	
FB203	1-414-228-11	FERRITE OUH		L016	1-412-946-11	INDUCTOR 3 9uH	
FB204	1-414-228-11	FERRITE OUH		L017	1-414-754-11	INDUCTOR 10uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L018	1-410-656-11	INDUCTOR CHIP 150uH	
FB205	1-414-228-11	FERRITE OUH		L019	1-412-957-11	INDUCTOR 33uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L152	1-412-939-11	INDUCTOR 1uH	
FB206	1-414-228-11	FERRITE OUH				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
FB501	1-414-228-11	FERRITE OUH		L153	1-414-754-11	INDUCTOR 10uH	
FB503	1-500-284-21	FERRITE OUH		L154	1-414-754-11	INDUCTOR 10uH	
FB504	1-500-284-21	FERRITE OUH		L155	1-414-754-11	INDUCTOR 10uH	
FB505	1-500-284-21	FERRITE OUH		L156	1-414-754-11	INDUCTOR 10uH	
		(TRV15/TRV15PK/TRV15E/TRV15EP)		L201	1-414-754-11	INDUCTOR 10uH	
FB506	1-414-228-11	FERRITE OUH		L202	1-414-754-11	INDUCTOR 10uH	
		< IC >		L203	1-414-754-11	INDUCTOR 10uH	
IC001	8-752-079-46	IC CXA2084R-T6		L204	1-410-658-31	INDUCTOR CHIP 220uH	
IC151	8-752-078-82	IC CXA2030R-T6		L205	1-412-955-11	INDUCTOR 22uH	
IC152	8-759-169-02	IC MB88344BPV-G-BND-ER				(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC201	8-759-494-73	IC MB90097PFV-G-104-BND		L205	1-412-957-11	INDUCTOR 33uH	
IC202	8-759-494-55	IC MB87F126PFF-G-BND				(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC204	8-752-390-52	IC CXD3124R-T6		L206	1-412-945-11	INDUCTOR 3 3uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L207	1-414-754-11	INDUCTOR 10uH	
IC301	8-759-494-29	IC AN2982FH-EB		L209	1-414-754-11	INDUCTOR 10uH	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L402	1-414-754-11	INDUCTOR 10uH	
IC301	8-759-494-30	IC AN2984FH-EB		L501	1-414-398-11	INDUCTOR 10uH	
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		L502	1-216-295-91	SHORT 0	
IC371	8-759-494-52	IC BA7783FS-E2				(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC401	8-759-445-94	IC AK6480AM-E2		L502	1-412-955-11	INDUCTOR 22uH	
						(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC402	8-759-499-08	IC MB91191PFF-G-BND-ER		L552	1-414-398-11	INDUCTOR 10uH	
IC451	8-759-327-67	IC LB1950V-TLM		L553	1-414-754-11	INDUCTOR 10uH	
IC452	8-759-327-61	IC LB8112V-TLM		L555	1-414-754-11	INDUCTOR 10uH	
		(EXCEPT TRV15E/TRV15EP/TRV35E)		L602	1-414-754-11	INDUCTOR 10uH	
IC452	8-759-327-62	IC TA8482FN-EL		L751	1-412-948-11	INDUCTOR 5 6uH	
		(TRV15E/TRV15EP/TRV35E)				(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC501	8-752-384-70	IC CXD2486R-T4		L752	1-412-957-11	INDUCTOR 33uH	
						(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC502	8-759-462-43	IC AD9800JCSTR		L753	1-412-957-11	INDUCTOR 33uH	
IC551	8-759-444-87	IC NJM324V(TE2)				(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
IC552	8-759-351-46	IC MPC17A34RVME (NTSC)				(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
		(EXCEPT TRV15E/TRV15EP/TRV35E)					
IC552	8-759-475-79	IC uPD16833AG3-E2 (PAL)					
		(TRV15E/TRV15EP/TRV35E)					

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Ref No	Part No	Description	Remark	Ref No	Part No	Description	Remark
< TRANSISTOR >				Q205	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q001	8-729-031-69	TRANSISTOR 2SA1965-TL		Q208	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q002	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q213	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q003	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q214	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q004	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q215	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q005	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q216	8-729-037-52	TRANSISTOR 2SC4738F-Y/GR(TPL3) (TRV93)	
Q006	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q217	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q007	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q218	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q008	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q301	8-729-042-74	TRANSISTOR UN9216J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q009	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q302	8-729-042-74	TRANSISTOR UN9216J-(K8) SO	
Q010	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q305	8-729-042-61	TRANSISTOR UN9115J-(K8) SO	
Q011	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q306	8-729-042-73	TRANSISTOR UN9215J-(K8) SO	
Q012	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q307	8-729-042-73	TRANSISTOR UN9215J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q017	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q308	8-729-037-61	TRANSISTOR UN9113J-(K8) SO	
Q019	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		Q309	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q020	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q310	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q021	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q371	8-729-042-74	TRANSISTOR UN9216J-(K8) SO	
Q022	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q372	8-729-042-74	TRANSISTOR UN9216J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q023	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q452	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q024	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q453	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q025	8-729-043-40	TRANSISTOR 2SC4627J-C(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q454	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q026	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q455	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q027	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q456	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q028	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		Q501	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q029	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q551	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	
Q030	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	Q552	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q032	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q553	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q033	8-729-031-69	TRANSISTOR 2SA1965-TL		Q607	8-729-041-43	TRANSISTOR HN1L02FU(TE85R)	
Q034	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		Q608	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	
Q036	8-729-043-40	TRANSISTOR 2SC4627J-C(K8) SO		Q609	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO	(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q038	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		Q610	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	
Q039	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		Q611	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q040	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		Q619	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q041	8-729-230-72	TRANSISTOR 2SA1362-YG-EL		Q620	8-729-042-58	TRANSISTOR UN9111J-(K8) SO	
Q042	8-729-037-74	TRANSISTOR UN9213J-(K8) SO		< RESISTOR >			
Q043	8-729-031-69	TRANSISTOR 2SA1965-TL	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	R001	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q044	8-729-037-74	TRANSISTOR UN9213J-(K8) SO	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	R002	1-216-864-11	METAL CHIP 0 5% 1/16W	(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
Q151	8-729-037-61	TRANSISTOR UN9113J-(K8) SO		R003	1-216-806-11	RES.CHIP 56 5% 1/16W	
Q153	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)		R004	1-216-818-11	METAL CHIP 560 5% 1/16W	
Q154	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	R005	1-216-809-11	METAL CHIP 100 5% 1/16W	
Q156	8-729-040-77	TRANSISTOR 2SC5376-B(TE85L)	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	R006	1-216-825-11	METAL CHIP 2 2K 5% 1/16W	
Q202	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R007	1-216-829-11	METAL CHIP 4 7K 5% 1/16W	
Q203	8-729-037-53	TRANSISTOR 2SB1462J-QR(K8) SO		R008	1-216-814-11	METAL CHIP 270 5% 1/16W	
Q204	8-729-037-52	TRANSISTOR 2SD2216J-QR(K8) SO		R009	1-216-813-11	METAL CHIP 220 5% 1/16W	
				R010	1-216-828-11	METAL CHIP 3 9K 5% 1/16W	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
				R011	1-216-828-11	METAL CHIP 3 9K 5% 1/16W	(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
R012	1-216-828-11	METAL CHIP 3.9K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R064	1-216-864-11	METAL CHIP 0 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R013	1-216-828-11	METAL CHIP 3.9K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R065	1-216-833-11	METAL CHIP 10K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R014	1-216-837-11	METAL CHIP 22K 5% 1/16W		R066	1-216-823-11	METAL CHIP 1.5K 5% 1/16W (TRV15E/TRV15EP/TRV35E)	
R015	1-216-839-11	METAL CHIP 33K 5% 1/16W					
R016	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R066	1-216-825-11	METAL CHIP 2.2K 5% 1/16W (EXCEPT TRV15E/TRV15EP/TRV35E)	
R017	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R067	1-216-817-11	METAL CHIP 470 5% 1/16W	
R018	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R068	1-216-817-11	METAL CHIP 470 5% 1/16W	
R019	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R069	1-216-864-11	METAL CHIP 0 5% 1/16W	
R020	1-216-837-11	METAL CHIP 22K 5% 1/16W		R072	1-216-864-11	METAL CHIP 0 5% 1/16W	
R021	1-216-837-11	METAL CHIP 22K 5% 1/16W		R073	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R023	1-216-837-11	METAL CHIP 22K 5% 1/16W		R074	1-216-816-11	METAL CHIP 390 5% 1/16W	
R025	1-216-837-11	METAL CHIP 22K 5% 1/16W		R075	1-216-817-11	METAL CHIP 470 5% 1/16W	
R026	1-216-816-11	METAL CHIP 390 5% 1/16W		R076	1-216-816-11	METAL CHIP 390 5% 1/16W	
R027	1-216-816-11	METAL CHIP 390 5% 1/16W		R077	1-216-814-11	METAL CHIP 270 5% 1/16W (TRV15E/TRV15EP/TRV35E)	
R029	1-216-837-11	METAL CHIP 22K 5% 1/16W		R077	1-216-815-11	METAL CHIP 330 5% 1/16W (TRV15/TRV15PK/TRV25/TRV25PK/TRV215/TRV35/TRV35PK/TRV315)	
R031	1-216-837-11	METAL CHIP 22K 5% 1/16W		R078	1-216-815-11	METAL CHIP 330 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R032	1-216-816-11	METAL CHIP 390 5% 1/16W		R079	1-216-815-11	METAL CHIP 330 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R033	1-216-816-11	METAL CHIP 390 5% 1/16W		R080	1-216-813-11	METAL CHIP 220 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R034	1-216-864-11	METAL CHIP 0 5% 1/16W		R081	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R035	1-216-841-11	METAL CHIP 47K 5% 1/16W		R082	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R037	1-216-824-11	METAL CHIP 1.8K 5% 1/16W		R083	1-216-820-11	METAL CHIP 820 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R038	1-216-841-11	METAL CHIP 47K 5% 1/16W		R084	1-216-833-11	METAL CHIP 10K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R039	1-216-824-11	METAL CHIP 1.8K 5% 1/16W		R085	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R040	1-216-864-11	METAL CHIP 0 5% 1/16W		R087	1-216-821-11	METAL CHIP 1K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R043	1-216-833-11	METAL CHIP 10K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R088	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R045	1-216-845-11	METAL CHIP 100K 5% 1/16W		R092	1-216-809-11	METAL CHIP 100 5% 1/16W	
R046	1-216-821-11	METAL CHIP 1K 5% 1/16W		R093	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R047	1-216-864-11	METAL CHIP 0 5% 1/16W		R094	1-216-815-11	METAL CHIP 330 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R048	1-216-864-11	METAL CHIP 0 5% 1/16W		R095	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R049	1-216-833-11	METAL CHIP 10K 5% 1/16W		R096	1-216-813-11	METAL CHIP 220 5% 1/16W	
R050	1-216-837-11	METAL CHIP 22K 5% 1/16W		R098	1-216-817-11	METAL CHIP 470 5% 1/16W	
R051	1-216-825-11	METAL CHIP 2.2K 5% 1/16W		R099	1-216-817-11	METAL CHIP 470 5% 1/16W	
R052	1-216-833-11	METAL CHIP 10K 5% 1/16W		R101	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R055	1-216-829-11	METAL CHIP 4.7K 5% 1/16W (EXCEPT TRV15E/TRV15EP/TRV35E)		R102	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R055	1-216-830-11	METAL CHIP 5.6K 5% 1/16W (TRV15E/TRV15EP/TRV35E)		R103	1-216-816-11	METAL CHIP 390 5% 1/16W	
R056	1-216-855-11	METAL CHIP 680K 5% 1/16W		R104	1-216-828-11	METAL CHIP 3.9K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R057	1-216-819-11	METAL CHIP 680 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R105	1-216-814-11	METAL CHIP 270 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R057	1-216-864-11	METAL CHIP 0 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R105	1-216-819-11	METAL CHIP 680 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R058	1-216-853-11	METAL CHIP 470K 5% 1/16W		R106	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R059	1-216-821-11	METAL CHIP 1K 5% 1/16W		R107	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R060	1-216-837-11	METAL CHIP 22K 5% 1/16W		R109	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R061	1-216-833-11	METAL CHIP 10K 5% 1/16W		R110	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R062	1-216-818-11	METAL CHIP 560 5% 1/16W		R112	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R063	1-216-817-11	METAL CHIP 470 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)		R113	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R063	1-216-818-11	METAL CHIP 560 5% 1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)					
R064	1-216-828-11	METAL CHIP 3.9K 5% 1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)					

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Ref. No	Part No	Description	Remark
R152	1-216-822-11	METAL CHIP 1 2K 5%	1/16W
R154	1-216-822-11	METAL CHIP 1 2K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R157	1-216-822-11	METAL CHIP 1 2K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R161	1-216-804-11	METAL CHIP 39 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R162	1-216-803-11	METAL CHIP 33 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R165	1-216-803-11	METAL CHIP 33 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R166	1-216-804-11	METAL CHIP 39 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R167	1-216-803-11	METAL CHIP 33 5%	1/16W
R170	1-216-804-11	METAL CHIP 39 5%	1/16W
R175	1-216-836-11	METAL CHIP 18K 5%	1/16W
		(TRV15E/TRV15EP/TRV35E)	
R175	1-216-837-11	METAL CHIP 22K 5%	1/16W
		(EXCEPT TRV15E/TRV15EP/TRV35E)	
R176	1-216-837-11	METAL CHIP 22K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R177	1-216-821-11	METAL CHIP 1K 5%	1/16W
R178	1-216-821-11	METAL CHIP 1K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R179	1-216-815-11	METAL CHIP 330 5%	1/16W
R180	1-216-815-11	METAL CHIP 330 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R183	1-218-876-11	RES.CHIP 16K 0 50%	1/16W
R184	1-218-847-11	RES.CHIP 1K 0 50%	1/16W
R202	1-216-833-11	METAL CHIP 10K 5%	1/16W
R203	1-216-814-11	METAL CHIP 270 5%	1/16W
R205	1-216-835-11	METAL CHIP 15K 5%	1/16W
R206	1-216-827-11	METAL CHIP 3 3K 5%	1/16W
R208	1-216-827-11	METAL CHIP 3 3K 5%	1/16W
R210	1-216-809-11	METAL CHIP 100 5%	1/16W
R211	1-216-830-11	METAL CHIP 5 6K 5%	1/16W
R212	1-216-825-11	METAL CHIP 2 2K 5%	1/16W
R214	1-216-823-11	METAL CHIP 1 5K 5%	1/16W
R215	1-216-822-11	METAL CHIP 1 2K 5%	1/16W
R216	1-216-811-11	METAL CHIP 150 5%	1/16W
R217	1-216-864-11	METAL CHIP 0 5%	1/16W
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R218	1-216-826-11	METAL CHIP 2 7K 5%	1/16W
R219	1-216-826-11	METAL CHIP 2 7K 5%	1/16W
R220	1-216-815-11	METAL CHIP 330 5%	1/16W
R222	1-216-826-11	METAL CHIP 2 7K 5%	1/16W
		(TRV93)	
R223	1-216-821-11	METAL CHIP 1K 5%	1/16W
R224	1-216-831-11	METAL CHIP 6 8K 5%	1/16W
R225	1-216-826-11	METAL CHIP 2 7K 5%	1/16W
R226	1-216-820-11	METAL CHIP 820 5%	1/16W
R227	1-216-811-11	METAL CHIP 150 5%	1/16W
R228	1-216-813-11	METAL CHIP 220 5%	1/16W
R229	1-216-805-11	METAL CHIP 47 5%	1/16W
R230	1-216-812-11	METAL CHIP 180 5%	1/16W
R231	1-216-812-11	METAL CHIP 180 5%	1/16W
R232	1-216-815-11	METAL CHIP 330 5%	1/16W
R233	1-216-824-11	METAL CHIP 1 8K 5%	1/16W
R234	1-216-832-11	METAL CHIP 8 2K 5%	1/16W
R236	1-216-825-11	METAL CHIP 2 2K 5%	1/16W

Ref. No	Part No	Description	Remark
R237	1-216-825-11	METAL CHIP 2 2K 5%	1/16W
R238	1-216-832-11	METAL CHIP 8 2K 5%	1/16W
R239	1-216-827-11	METAL CHIP 3 3K 5%	1/16W
R240	1-216-857-11	METAL CHIP 1M 5%	1/16W
R241	1-216-828-11	METAL CHIP 3 9K 5%	1/16W
R242	1-216-845-11	METAL CHIP 100K 5%	1/16W
R243	1-216-845-11	METAL CHIP 100K 5%	1/16W
R244	1-216-845-11	METAL CHIP 100K 5%	1/16W
R245	1-216-840-11	METAL CHIP 39K 5%	1/16W
R246	1-216-835-11	METAL CHIP 15K 5%	1/16W
R247	1-216-817-11	METAL CHIP 470 5%	1/16W
R248	1-216-822-11	METAL CHIP 1 2K 5%	1/16W
R249	1-216-833-11	METAL CHIP 10K 5%	1/16W
R250	1-216-295-91	SHORT 0	
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R251	1-216-833-11	METAL CHIP 10K 5%	1/16W
R252	1-216-821-11	METAL CHIP 1K 5%	1/16W
R253	1-216-845-11	METAL CHIP 100K 5%	1/16W
R254	1-216-864-11	METAL CHIP 0 5%	1/16W
R255	1-216-833-11	METAL CHIP 10K 5%	1/16W
R256	1-216-845-11	METAL CHIP 100K 5%	1/16W
R257	1-216-295-91	SHORT 0	
R302	1-216-817-11	METAL CHIP 470 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R303	1-216-817-11	METAL CHIP 470 5%	1/16W
R304	1-216-817-11	METAL CHIP 470 5%	1/16W
R305	1-216-817-11	METAL CHIP 470 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R308	1-216-864-11	METAL CHIP 0 5%	1/16W
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R311	1-216-841-11	METAL CHIP 47K 5%	1/16W
R313	1-216-864-11	METAL CHIP 0 5%	1/16W
R314	1-216-823-11	METAL CHIP 1 5K 5%	1/16W
R315	1-216-823-11	METAL CHIP 1 5K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R316	1-216-841-11	METAL CHIP 47K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R317	1-216-845-11	METAL CHIP 100K 5%	1/16W
R318	1-216-845-11	METAL CHIP 100K 5%	1/16W
R319	1-216-845-11	METAL CHIP 100K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R320	1-216-849-11	METAL CHIP 220K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R321	1-216-843-11	METAL CHIP 68K 5%	1/16W
R322	1-216-845-11	METAL CHIP 100K 5%	1/16W
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R322	1-216-849-11	METAL CHIP 220K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R323	1-216-837-11	METAL CHIP 22K 5%	1/16W
R325	1-216-849-11	METAL CHIP 220K 5%	1/16W
		(EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R325	1-216-851-11	METAL CHIP 330K 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R331	1-216-864-11	METAL CHIP 0 5%	1/16W
R343	1-216-864-11	METAL CHIP 0 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R371	1-216-821-11	METAL CHIP 1K 5%	1/16W
R373	1-216-809-11	METAL CHIP 100 5%	1/16W
		(TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R374	1-216-809-11	METAL CHIP 100 5%	1/16W

Ref No	Part No	Description			Remark	Ref No	Part No	Description			Remark
R375	1-216-834-11	METAL CHIP	12K	5%	1/16W	R468	1-216-833-11	METAL CHIP	10K	5%	1/16W
R376	1-216-834-11	METAL CHIP	12K	5%	1/16W	R469	1-216-841-11	METAL CHIP	47K	5%	1/16W
R377	1-216-834-11	METAL CHIP	12K	5%	1/16W	R470	1-216-829-11	METAL CHIP	4 7K	5%	1/16W
R378	1-216-825-11	METAL CHIP	2 2K	5%	1/16W	R471	1-216-833-11	METAL CHIP	10K	5%	1/16W
R379	1-216-852-11	METAL CHIP	390K	5%	1/16W	R472	1-216-833-11	METAL CHIP	10K	5%	1/16W
R382	1-216-837-11	METAL CHIP	22K	5%	1/16W	(EXCEPT TRV15E/TRV15EP/TRV35E)					
R383	1-216-837-11	METAL CHIP	22K	5%	1/16W	R472	1-216-837-11	METAL CHIP	22K	5%	1/16W
R384	1-216-829-11	METAL CHIP	4 7K	5%	1/16W	(TRV15E/TRV15EP/TRV35E)					
R385	1-216-826-11	METAL CHIP	2 7K	5%	1/16W	R473	1-216-841-11	METAL CHIP	47K	5%	1/16W
R386	1-216-849-11	METAL CHIP	220K	5%	1/16W	R474	1-216-817-11	METAL CHIP	470	5%	1/16W
R402	1-216-821-11	METAL CHIP	1K	5%	1/16W	R475	1-216-838-11	METAL CHIP	27K	5%	1/16W
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	R476	1-216-817-11	METAL CHIP	470	5%	1/16W
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W	R477	1-216-864-11	METAL CHIP	0	5%	1/16W
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W	R479	1-216-864-11	METAL CHIP	0	5%	1/16W
R406	1-216-845-11	METAL CHIP	100K	5%	1/16W	R480	1-216-864-11	METAL CHIP	0	5%	1/16W
R407	1-216-845-11	METAL CHIP	100K	5%	1/16W	R481	1-216-864-11	METAL CHIP	0	5%	1/16W
R409	1-216-845-11	METAL CHIP	100K	5%	1/16W	R482	1-216-830-11	METAL CHIP	5 6K	5%	1/16W
R410	1-216-829-11	METAL CHIP	4 7K	5%	1/16W	(TRV15E/TRV15EP/TRV35E)					
R412	1-216-829-11	METAL CHIP	4 7K	5%	1/16W	R482	1-216-833-11	METAL CHIP	10K	5%	1/16W
R414	1-216-864-11	METAL CHIP	0	5%	1/16W	(EXCEPT TRV15E/TRV15EP/TRV35E)					
R415	1-216-821-11	METAL CHIP	1K	5%	1/16W	R483	1-216-836-11	METAL CHIP	18K	5%	1/16W
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W	R484	1-217-671-11	METAL CHIP	1	5%	1/10W
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W	R485	1-217-671-11	METAL CHIP	1	5%	1/10W
R418	1-216-821-11	METAL CHIP	1K	5%	1/16W	R486	1-216-845-11	METAL CHIP	100K	5%	1/16W
R419	1-216-839-11	METAL CHIP	33K	5%	1/16W	R487	1-216-827-11	METAL CHIP	3 3K	5%	1/16W
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W	R488	1-216-829-11	METAL CHIP	4 7K	5%	1/16W
R421	1-216-833-11	METAL CHIP	10K	5%	1/16W	R490	1-216-023-00	METAL CHIP	82	5%	1/10W
R424	1-216-841-11	METAL CHIP	47K	5%	1/16W	R502	1-216-798-11	RES,CHIP	12	5%	1/16W
R425	1-216-853-11	METAL CHIP	470K	5%	1/16W	R503	1-216-798-11	RES,CHIP	12	5%	1/16W
R426	1-216-825-11	METAL CHIP	2 2K	5%	1/16W	R504	1-216-845-11	METAL CHIP	100K	5%	1/16W
R427	1-216-841-11	METAL CHIP	47K	5%	1/16W	R505	1-216-864-11	METAL CHIP	0	5%	1/16W
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W	R506	1-216-857-11	METAL CHIP	1M	5%	1/16W
R429	1-216-811-11	METAL CHIP	150	5%	1/16W	R508	1-216-809-11	METAL CHIP	100	5%	1/16W
R430	1-216-813-11	METAL CHIP	220	5%	1/16W	R509	1-216-864-11	METAL CHIP	0	5%	1/16W
R431	1-216-825-11	METAL CHIP	2 2K	5%	1/16W	R510	1-216-809-11	METAL CHIP	100	5%	1/16W
R432	1-216-845-11	METAL CHIP	100K	5%	1/16W	R511	1-216-809-11	METAL CHIP	100	5%	1/16W
R433	1-216-845-11	METAL CHIP	100K	5%	1/16W	(TRV15/TRV15PK/TRV15E/TRV15EP)					
R434	1-216-853-11	METAL CHIP	470K	5%	1/16W	R512	1-216-853-11	METAL CHIP	470K	5%	1/16W
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W	R513	1-216-825-11	METAL CHIP	2 2K	5%	1/16W
R440	1-216-841-11	METAL CHIP	47K	5%	1/16W	R514	1-216-821-11	METAL CHIP	1K	5%	1/16W
R441	1-216-845-11	METAL CHIP	100K	5%	1/16W	R515	1-216-864-11	METAL CHIP	0	5%	1/16W
R452	1-217-671-11	METAL CHIP	1	5%	1/10W	R522	1-216-864-11	METAL CHIP	0	5%	1/16W
R453	1-217-671-11	METAL CHIP	1	5%	1/10W	R525	1-216-864-11	METAL CHIP	0	5%	1/16W
R454	1-217-671-11	METAL CHIP	1	5%	1/10W	R526	1-216-864-11	METAL CHIP	0	5%	1/16W
R455	1-216-833-11	METAL CHIP	10K	5%	1/16W	R527	1-216-864-11	METAL CHIP	0	5%	1/16W
R456	1-216-833-11	METAL CHIP	10K	5%	1/16W	(EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)					
R457	1-216-833-11	METAL CHIP	10K	5%	1/16W	R529	1-216-864-11	METAL CHIP	0	5%	1/16W
R458	1-216-808-11	METAL CHIP	82	5%	1/16W	R551	1-216-841-11	METAL CHIP	47K	5%	1/16W
R459	1-216-864-11	METAL CHIP	0	5%	1/16W	R554	1-216-843-11	METAL CHIP	68K	5%	1/16W
R460	1-216-864-11	METAL CHIP	0	5%	1/16W	R555	1-216-829-11	METAL CHIP	4 7K	5%	1/16W
R461	1-216-853-11	METAL CHIP	470K	5%	1/16W	R556	1-216-001-00	METAL CHIP	10	5%	1/10W
R462	1-216-853-11	METAL CHIP	470K	5%	1/16W	R557	1-216-843-11	METAL CHIP	68K	5%	1/16W
R463	1-216-853-11	METAL CHIP	470K	5%	1/16W	R558	1-216-295-91	SHORT	0		
R464	1-216-851-11	METAL CHIP	330K	5%	1/16W	R560	1-216-821-11	METAL CHIP	1K	5%	1/16W
R465	1-216-845-11	METAL CHIP	100K	5%	1/16W	R561	1-216-853-11	METAL CHIP	470K	5%	1/16W
R466	1-216-841-11	METAL CHIP	47K	5%	1/16W	R562	1-216-849-11	METAL CHIP	220K	5%	1/16W
R467	1-216-833-11	METAL CHIP	10K	5%	1/16W	R563	1-216-853-11	METAL CHIP	470K	5%	1/16W
						R564	1-216-853-11	METAL CHIP	470K	5%	1/16W
						R565	1-216-833-11	METAL CHIP	10K	5%	1/16W

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Ref No	Part No	Description	Remark
R566	1-216-835-11	METAL CHIP 15K 5%	1/16W
R567	1-216-825-11	METAL CHIP 2 2K 5%	1/16W
R569	1-216-825-11	METAL CHIP 2 2K 5%	1/16W
R570	1-216-841-11	METAL CHIP 47K 5%	1/16W
R571	1-216-837-11	METAL CHIP 22K 5%	1/16W
R572	1-216-845-11	METAL CHIP 100K 5%	1/16W
R573	1-216-815-11	METAL CHIP 330 5%	1/16W
R574	1-216-821-11	METAL CHIP 1K 5%	1/16W
R575	1-216-821-11	METAL CHIP 1K 5%	1/16W
R576	1-216-821-11	METAL CHIP 1K 5%	1/16W
R577	1-216-833-11	METAL CHIP 10K 5%	1/16W
R579	1-216-821-11	METAL CHIP 1K 5%	1/16W
R582	1-216-864-11	METAL CHIP 0 5%	1/16W
R603	1-216-845-11	METAL CHIP 100K 5%	1/16W
R604	1-216-813-11	METAL CHIP 220 5%	1/16W
R605	1-216-841-11	METAL CHIP 47K 5%	1/16W
R606	1-216-829-11	METAL CHIP 4 7K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R608	1-216-845-11	METAL CHIP 100K 5%	1/16W
R610	1-216-821-11	METAL CHIP 1K 5%	1/16W
R611	1-216-825-11	METAL CHIP 2 2K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R612	1-216-853-11	METAL CHIP 470K 5%	1/16W
R613	1-216-821-11	METAL CHIP 1K 5%	1/16W
R614	1-216-821-11	METAL CHIP 1K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R618	1-216-853-11	METAL CHIP 470K 5%	1/16W
R619	1-216-853-11	METAL CHIP 470K 5%	1/16W
R620	1-216-853-11	METAL CHIP 470K 5%	1/16W
R621	1-216-853-11	METAL CHIP 470K 5%	1/16W
R622	1-216-853-11	METAL CHIP 470K 5%	1/16W
R624	1-216-853-11	METAL CHIP 470K 5%	1/16W
R625	1-216-845-11	METAL CHIP 100K 5%	1/16W
R627	1-216-853-11	METAL CHIP 470K 5%	1/16W
R628	1-216-841-11	METAL CHIP 47K 5%	1/16W
R629	1-216-833-11	METAL CHIP 10K 5%	1/16W
R630	1-216-826-11	METAL CHIP 2 7K 5%	1/16W
R631	1-216-845-11	METAL CHIP 100K 5%	1/16W
R632	1-216-857-11	METAL CHIP 1M 5%	1/16W
R633	1-216-853-11	METAL CHIP 470K 5%	1/16W
R634	1-216-853-11	METAL CHIP 470K 5%	1/16W
R635	1-216-857-11	METAL CHIP 1M 5%	1/16W
R636	1-216-857-11	METAL CHIP 1M 5%	1/16W
R637	1-216-845-11	METAL CHIP 100K 5%	1/16W
R638	1-216-845-11	METAL CHIP 100K 5%	1/16W
R639	1-216-845-11	METAL CHIP 100K 5%	1/16W
R642	1-216-821-11	METAL CHIP 1K 5%	1/16W
R643	1-216-857-11	METAL CHIP 1M 5%	1/16W
R644	1-216-841-11	METAL CHIP 47K 5%	1/16W
R645	1-216-845-11	METAL CHIP 100K 5%	1/16W
R646	1-216-853-11	METAL CHIP 470K 5%	1/16W
R647	1-216-853-11	METAL CHIP 470K 5%	1/16W
R648	1-216-853-11	METAL CHIP 470K 5%	1/16W
R649	1-216-857-11	METAL CHIP 1M 5%	1/16W
R650	1-219-570-11	RES,CHIP 10M 5%	1/16W
R651	1-216-845-11	METAL CHIP 100K 5%	1/16W
R652	1-216-853-11	METAL CHIP 470K 5%	1/16W
R653	1-216-853-11	METAL CHIP 470K 5%	1/16W

Ref No	Part No	Description	Remark
R654	1-216-817-11	METAL CHIP 470 5%	1/16W
R655	1-216-853-11	METAL CHIP 470K 5%	1/16W
R662	1-216-841-11	METAL CHIP 47K 5%	1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R663	1-216-853-11	METAL CHIP 470K 5%	1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R665	1-216-853-11	METAL CHIP 470K 5%	1/16W (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R666	1-216-821-11	METAL CHIP 1K 5%	1/16W
R667	1-216-821-11	METAL CHIP 1K 5%	1/16W
R668	1-216-821-11	METAL CHIP 1K 5%	1/16W
R669	1-216-821-11	METAL CHIP 1K 5%	1/16W
R670	1-216-821-11	METAL CHIP 1K 5%	1/16W
R671	1-216-821-11	METAL CHIP 1K 5%	1/16W
R672	1-216-821-11	METAL CHIP 1K 5%	1/16W
R673	1-216-821-11	METAL CHIP 1K 5%	1/16W
R675	1-216-821-11	METAL CHIP 1K 5%	1/16W
R676	1-216-821-11	METAL CHIP 1K 5%	1/16W
R677	1-216-821-11	METAL CHIP 1K 5%	1/16W
R678	1-216-821-11	METAL CHIP 1K 5%	1/16W
R679	1-216-821-11	METAL CHIP 1K 5%	1/16W
R680	1-216-845-11	METAL CHIP 100K 5%	1/16W
R681	1-216-821-11	METAL CHIP 1K 5%	1/16W
R682	1-216-821-11	METAL CHIP 1K 5%	1/16W
R683	1-216-821-11	METAL CHIP 1K 5%	1/16W
R684	1-216-821-11	METAL CHIP 1K 5%	1/16W
R685	1-216-821-11	METAL CHIP 1K 5%	1/16W
R686	1-216-821-11	METAL CHIP 1K 5%	1/16W
R687	1-216-821-11	METAL CHIP 1K 5%	1/16W
R689	1-216-864-11	METAL CHIP 0 5%	1/16W (EXCEPT TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R690	1-216-821-11	METAL CHIP 1K 5%	1/16W
R691	1-216-845-11	METAL CHIP 100K 5%	1/16W
R692	1-216-853-11	METAL CHIP 470K 5%	1/16W
R693	1-216-821-11	METAL CHIP 1K 5%	1/16W
R726	1-216-864-11	METAL CHIP 0 5%	1/16W
R752	1-216-841-11	METAL CHIP 47K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R753	1-216-841-11	METAL CHIP 47K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R755	1-216-837-11	METAL CHIP 22K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R756	1-216-829-11	METAL CHIP 4 7K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R757	1-216-829-11	METAL CHIP 4 7K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R758	1-216-833-11	METAL CHIP 10K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R759	1-216-833-11	METAL CHIP 10K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R760	1-216-835-11	METAL CHIP 15K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R761	1-216-857-11	METAL CHIP 1M 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R763	1-218-879-11	RES,CHIP 22K 0 50%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R764	1-216-815-11	METAL CHIP 330 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)
R765	1-216-821-11	METAL CHIP 1K 5%	1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)

Ref No	Part No	Description	Remark
R767	1-216-817-11	METAL CHIP 470 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R768	1-216-847-11	METAL CHIP 150K 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R770	1-216-847-11	METAL CHIP 150K 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R771	1-216-818-11	METAL CHIP 560 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R772	1-216-831-11	METAL CHIP 6 8K 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R773	1-216-817-11	METAL CHIP 470 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R774	1-216-840-11	METAL CHIP 39K 5% 1/16W (TRV35/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R775	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV15E/TRV15EP/TRV35E)	
R917	1-216-837-11	METAL CHIP 22K 5% 1/16W (EXCEPT TRV93)	
R917	1-216-841-11	METAL CHIP 47K 5% 1/16W (TRV93)	
R918	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R919	1-216-837-11	METAL CHIP 22K 5% 1/16W (TRV35)	
R919	1-216-841-11	METAL CHIP 47K 5% 1/16W (TRV25/TRV25PK/TRV215)	
R919	1-216-842-11	METAL CHIP 56K 5% 1/16W (TRV15/TRV15PK)	
R919	1-216-845-11	METAL CHIP 100K 5% 1/16W (TRV15E/TRV15EP/TRV35E/TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
R920	1-216-837-11	METAL CHIP 22K 5% 1/16W (TRV15E/TRV15EP)	
R920	1-216-841-11	METAL CHIP 47K 5% 1/16W (TRV35E)	
R920	1-216-843-11	METAL CHIP 68K 5% 1/16W (TRV15/TRV15PK)	
R920	1-216-845-11	METAL CHIP 100K 5% 1/16W (TRV25/TRV25PK/TRV215/TRV35)	
R921	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R922	1-217-671-11	METAL CHIP 1 5% 1/10W	
R923	1-217-671-11	METAL CHIP 1 5% 1/10W	
R924	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R925	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R926	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
R927	1-216-864-11	METAL CHIP 0 5% 1/16W (TRV93)	
< VIBRATOR >			
X151	1-767-028-21	VIBRATOR, CRYSTAL (14 318MHz) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
X401	1-760-655-41	VIBRATOR, CRYSTAL (20MHz)	
X501	1-760-320-11	VIBRATOR, CRYSTAL (28 6363MHz) (EXCEPT TRV15E/TRV15EP/TRV35E)	
X501	1-760-321-11	VIBRATOR, CRYSTAL (28 375MHz) (TRV15E/TRV15EP/TRV35E)	
X601	1-579-907-21	VIBRATOR, CERAMIC (20MHz)	
X602	1-760-458-21	VIBRATOR, CRYSTAL (32 798kHz)	

Ref No.	Part No	Description	Remark
A-7066-792-A	VF-99(VHL4) BOARD, COMPLETE ***** (EXCEPT TRV15E/TRV15EP/TRV35E/TRV93)		
A-7056-774-A	ED PWB, VF-99(HP) BOARD, COMPLETE ***** (TRV15E/TRV15EP/TRV35E) (Ref No 10,000 Series)		
< CAPACITOR >			
C901	1-107-854-11	TANTAL CHIP	68uF 20% 6 3V
C902	1-163-038-91	CERAMIC CHIP	0 1uF 25V
C903	1-135-145-11	TANTALUM CHIP	0 47uF 10% 35V
C904	1-162-965-11	CERAMIC CHIP	0 0015uF 10% 50V
C905	1-104-752-11	TANTAL CHIP	33uF 20% 6 3V
C906	1-162-638-11	CERAMIC CHIP	1uF 16V
C907	1-104-563-11	FILM CHIP	0 1uF 5% 16V
C908	1-162-920-11	CERAMIC CHIP	27PF 5% 50V
C909	1-163-009-11	CERAMIC CHIP	0 001uF 10% 50V
△C910	1-164-758-11	CERAMIC CHIP	0 0039uF 5% 50V
△C911	1-164-715-11	CERAMIC CHIP	0 0068uF 5% 50V
C912	1-107-854-11	TANTAL CHIP	68uF 20% 6 3V
C913	1-135-145-11	TANTALUM CHIP	0 47uF 10% 35V
C914	1-107-689-21	TANTAL CHIP	1uF 20% 35V
C914	1-113-984-11	TANTAL CHIP	1 5uF 20% 35V (TRV15E/TRV15EP/TRV35E)
C915	1-163-037-11	CERAMIC CHIP	0 022uF 10% 25V
C916	1-164-611-11	CERAMIC CHIP	0 001uF 10% 500V
< CONNECTOR >			
CN901	1-573-506-41	CONNECTOR, FPC (NON ZIF) 4P	
CN902	1-580-057-11	PIN, CONNECTOR 4P	
< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR	
D903	8-719-404-49	DIODE MA111-TX	
< IC >			
IC901	8-759-196-14	IC BA7149F-E2	
< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH	
L902	1-410-387-11	INDUCTOR CHIP 33uH	
△L903	1-411-697-11	COIL, FERRITE (HLC)	
< TRANSISTOR >			
Q901	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
Q902	8-729-106-68	TRANSISTOR 2SD1615-T1GLGK	
Q903	8-729-216-31	TRANSISTOR 2SA1163G-TE85L	
Q904	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX	
< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470 5% 1/16W
R902	1-216-817-11	METAL CHIP	470 5% 1/16W
R903	1-216-057-00	METAL CHIP	2 2K 5% 1/10W
R904	1-216-833-11	METAL CHIP	10K 5% 1/16W
R905	1-216-822-11	METAL CHIP	1 2K 5% 1/16W

The components identified by mark △ or dotted line with mark △ are critical for safety
Replace only with part number specified

Les composants identifiés par une marque △ sont critiques pour la sécurité
Ne les remplacer que par une pièce portant le numéro spécifié

VF-99

VF-119

Ref. No	Part No	Description	Remark
R906	1-216-813-11	METAL CHIP 220 5%	1/16W
R907	1-216-845-11	METAL CHIP 100K 5%	1/16W
R908	1-216-852-11	METAL CHIP 390K 5%	1/16W
R909	1-216-833-11	METAL CHIP 10K 5%	1/16W
R910	1-216-835-11	METAL CHIP 15K 5%	1/16W
R911	1-216-160-00	RES,CHIP 27 5%	1/8W
R912	1-216-857-11	METAL CHIP 1M 5%	1/16W
R913	1-216-820-11	METAL CHIP 820 5%	1/16W
R914	1-216-813-11	METAL CHIP 220 5%	1/16W
R915	1-216-793-11	RES,CHIP 4 7 5%	1/16W
R916	1-218-879-11	RES,CHIP 22K 0 50% 1/16W (EXCEPT TRV15E/TRV15EP/TRV35E/TRV93)	
R916	1-218-881-11	RES,CHIP 27K 0 50% 1/16W (TRV15E/TRV15EP/TRV35E)	
R917	1-218-891-11	RES,CHIP 68K 0 50% 1/16W (EXCEPT TRV15E/TRV15EP/TRV35E/TRV93)	
R917	1-218-893-11	RES,CHIP 82K 0 50% 1/16W (TRV15E/TRV15EP/TRV35E)	
R918	1-216-829-11	METAL CHIP 4 7K 5%	1/16W
R919	1-216-839-11	METAL CHIP 33K 5%	1/16W (EXCEPT TRV15E/TRV15EP/TRV35E/TRV93)
R919	1-216-843-11	METAL CHIP 68K 5%	1/16W (TRV15E/TRV15EP/TRV35E)
R920	1-216-837-11	METAL CHIP 22K 5%	1/16W
R921	1-216-795-11	RES,CHIP 6 8 5%	1/16W
R922	1-216-847-11	METAL CHIP 150K 5%	1/16W
R923	1-216-857-11	METAL CHIP 1M 5%	1/16W
R924	1-216-862-11	RES,CHIP 2 7M 5%	1/16W
R925	1-216-862-11	RES,CHIP 2 7M 5%	1/16W
R926	1-216-821-11	METAL CHIP 1K 5%	1/16W
R927	1-216-821-11	METAL CHIP 1K 5%	1/16W
R928	1-216-827-11	METAL CHIP 3 3K 5%	1/16W
R929	1-216-818-11	METAL CHIP 560 5%	1/16W
< VARIABLE RESISTOR >			
RV903	1-238-852-11	RES, ADJ, CERMET 470	
RV904	1-223-566-11	RES, ADJ, METAL GLAZE 1M	
< TRANSFORMER >			
△ T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK	
< THERMISTOR >			
TH901	1-809-350-21	THERMISTOR, NTC (2125)	
< CRT SOCKET >			
△ W901	1-540-019-21	SOCKET ASSY, CRT	
A-7073-437-A VF-119 BOARD, COMPLETE (TRV93)			

(Ref No 10,000 Series)			
< CAPACITOR >			
C5401	1-135-259-11	TANTAL CHIP 10uF 20%	6 3V
C5402	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C5403	1-135-179-21	TANTAL CHIP 2 2uF 20%	16V
C5404	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C5405	1-164-156-11	CERAMIC CHIP 0 1uF	25V

Ref. No	Part No	Description	Remark
C5406	1-164-156-11	CERAMIC CHIP 0 1uF	25V
C5407	1-135-181-21	TANTALUM CHIP 4 7uF 20%	6 3V
C5408	1-135-181-21	TANTALUM CHIP 4 7uF 20%	6 3V
C5409	1-135-181-21	TANTALUM CHIP 4 7uF 20%	6 3V
C5410	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C5411	1-135-181-21	TANTALUM CHIP 4 7uF 20%	6 3V
C5413	1-107-686-11	TANTAL CHIP 4 7uF 20%	16V
C5414	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C5415	1-164-505-11	CERAMIC CHIP 2 2uF	16V
C5416	1-115-566-11	CERAMIC CHIP 4 7uF 10%	10V
C5417	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C5418	1-115-566-11	CERAMIC CHIP 4 7uF 10%	10V
C5419	1-162-967-11	CERAMIC CHIP 0 0033uF 10%	50V
C5420	1-164-357-11	CERAMIC CHIP 1000PF 5%	50V
C5421	1-162-927-11	CERAMIC CHIP 100PF 5%	50V
C5422	1-135-259-11	TANTAL CHIP 10uF 20%	6 3V
C5423	1-162-970-11	CERAMIC CHIP 0 01uF 10%	25V
C5424	1-165-112-11	CERAMIC CHIP 0 33uF	16V
C5427	1-165-112-11	CERAMIC CHIP 0 33uF	16V
C5429	1-107-682-11	CERAMIC CHIP 1uF 10%	16V
< CONNECTOR >			
CN5401	1-766-350-21	CONNECTOR, FFC/FPC 20P	
CN5402	1-691-380-21	CONNECTOR, FFC/FPC 16P	
< DIODE >			
D5401	8-713-102-80	DIODE 1T369-01-T8A	
< IC >			
IC5401	8-759-498-53	IC CXA8115R-T4	
IC5402	8-759-364-05	IC M62376GP-65AD	
IC5404	8-752-389-81	IC CXD2458R-T4	
< COIL >			
L5401	1-412-951-11	INDUCTOR 10uH	
L5402	1-412-951-11	INDUCTOR 10uH	
L5403	1-412-959-11	INDUCTOR 47uH	
L5404	1-412-949-21	INDUCTOR 6 8uH	
L5405	1-412-959-11	INDUCTOR 47uH	
< RESISTOR >			
R5401	1-216-864-11	METAL CHIP 0 5%	1/16W
R5403	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5405	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5408	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5409	1-216-839-11	METAL CHIP 33K 5%	1/16W
R5415	1-216-864-11	METAL CHIP 0 5%	1/16W
R5416	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5417	1-216-837-11	METAL CHIP 22K 5%	1/16W
R5420	1-216-843-11	METAL CHIP 68K 5%	1/16W
R5421	1-216-839-11	METAL CHIP 33K 5%	1/16W
R5422	1-216-840-11	METAL CHIP 39K 5%	1/16W
R5423	1-216-853-11	METAL CHIP 470K 5%	1/16W
R5424	1-216-840-11	METAL CHIP 39K 5%	1/16W
R5425	1-216-843-11	METAL CHIP 68K 5%	1/16W
R5426	1-216-839-11	METAL CHIP 33K 5%	1/16W

The components identified by mark △ or dotted line with mark △ are critical for safety
Replace only with part number specified

Les composants identifiés par une marque △ sont critiques pour la sécurité
Ne les remplacer que par une pièce portant le numéro spécifié

Ref No	Part No	Description	Remark		
R5429	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5431	1-216-809-11	METAL CHIP	100	5%	1/16W
R5432	1-216-809-11	METAL CHIP	100	5%	1/16W
R5433	1-218-877-11	RES,CHIP	18K	0 50%	1/16W
R5434	1-218-873-11	RES,CHIP	12K	0 50%	1/16W
R5435	1-216-809-11	METAL CHIP	100	5%	1/16W
R5437	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5439	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5440	1-218-905-11	RES,CHIP	270K	0 50%	1/16W
R5441	1-218-877-11	RES,CHIP	18K	0 50%	1/16W
R5444	1-216-835-11	METAL CHIP	15K	5%	1/16W
R5445	1-216-840-11	METAL CHIP	39K	5%	1/16W
R5446	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5447	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5448	1-216-839-11	METAL CHIP	33K	5%	1/16W
R5449	1-216-864-11	METAL CHIP	0	5%	1/16W
R5452	1-216-821-11	METAL CHIP	1K	5%	1/16W
R5458	1-216-864-11	METAL CHIP	0	5%	1/16W
R5460	1-216-864-11	METAL CHIP	0	5%	1/16W
R5468	1-216-864-11	METAL CHIP	0	5%	1/16W
R5469	1-216-864-11	METAL CHIP	0	5%	1/16W
R5470	1-216-864-11	METAL CHIP	0	5%	1/16W
R5471	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5472	1-218-883-11	RES,CHIP	33K	0 50%	1/16W

A-7073-438-A VF-120 BOARD, COMPLETE (TRV93)

(Ref No 10,000 Series)

< CAPACITOR >

C5302	1-104-916-11	TANTAL CHIP	6 8uF	20%	20V
C5303	1-164-227-11	CERAMIC CHIP	0 022uF	10%	25V
C5304	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V
C5305	1-104-851-11	TANTAL CHIP	10uF	20%	10V
C5306	1-164-676-11	CERAMIC CHIP	2200PF	5%	16V

C5307	1-135-181-21	TANTALUM CHIP	4 7uF	20%	6 3V
C5308	1-164-227-11	CERAMIC CHIP	0 022uF	10%	25V
C5309	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V
C5310	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C5311	1-107-826-11	CERAMIC CHIP	0 1uF	10%	16V

C5312	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C5313	1-165-128-11	CERAMIC CHIP	0 22uF		16V
C5314	1-162-970-11	CERAMIC CHIP	0 01uF	10%	25V

< CONNECTOR >

CN5301	1-691-346-11	CONNECTOR, FFC/FPC (ZIF) 8P			
CN5302	1-691-513-11	CONNECTOR, BOARD TO BOARD 12P			

< DIODE >

D5301	8-719-043-70	DIODE MA6S121-(TX)			
D5302	8-719-056-49	DIODE 1SS370(Te85L)			

< IC >

IC5301	8-759-097-75	IC MB3789PFV-G-BND-ER			
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Ref No	Part No	Description	Remark		
		< COIL >			
L5301	1-412-031-11	INDUCTOR CHIP	47uH		
		< TRANSISTOR >			
Q5301	8-729-028-81	TRANSISTOR RN2305-TE85L			
Q5304	8-729-403-35	TRANSISTOR UN5113-TX			
Q5305	8-729-402-42	TRANSISTOR UN5213-TX			
		< RESISTOR >			
R5301	1-216-809-11	METAL CHIP	100	5%	1/16W
R5304	1-218-901-11	RES,CHIP	180K	0 50%	1/16W
R5305	1-218-887-11	RES,CHIP	47K	0 50%	1/16W
R5306	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R5308	1-216-847-11	METAL CHIP	150K	5%	1/16W
R5309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R5310	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5311	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5312	1-216-843-11	METAL CHIP	68K	5%	1/16W
R5313	1-216-842-11	METAL CHIP	56K	5%	1/16W
R5314	1-216-850-11	METAL CHIP	270K	5%	1/16W
R5315	1-216-833-11	METAL CHIP	10K	5%	1/16W
R5316	1-216-851-11	METAL CHIP	330K	5%	1/16W
R5317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R5318	1-216-822-11	METAL CHIP	1 2K	5%	1/16W
R5321	1-216-837-11	METAL CHIP	22K	5%	1/16W
R5322	1-216-853-11	METAL CHIP	470K	5%	1/16W
R5324	1-216-864-11	METAL CHIP	0	5%	1/16W

A-7073-454-A VL-19 BOARD, COMPLETE (TRV93)

(Ref No 9,000 Series)

< CAPACITOR >

C151	1-115-566-11	CERAMIC CHIP	4 7uF	10%	10V
C152	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C153	1-162-964-11	CERAMIC CHIP	0 001uF	10%	50V

< CONNECTOR >

CN151	1-766-619-11	CONNECTOR, FFC/FPC 8P			
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< COIL >

L151	1-416-344-11	COIL, CHOKE	10uH		
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< TRANSISTOR >

Q151	8-729-043-94	TRANSISTOR CPH3106-PM-TL			
Q152	8-729-230-63	TRANSISTOR 2SD1819A-QRS-TX			

< RESISTOR >

R151	1-216-829-11	METAL CHIP	4 7K	5%	1/16W
R152	1-216-813-11	METAL CHIP	220	5%	1/16W
R153	1-216-821-11	METAL CHIP	1K	5%	1/16W
R154	1-216-845-11	METAL CHIP	100K	5%	1/16W

The components identified by mark $\triangle$ or dotted line with mark $\triangle$ are critical for safety
Replace only with part number specified

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Ne les remplacer que par une pièce portant le numéro spécifié

Ref. No	Part No	Description	Remark
		MISCELLANEOUS *****	
10	1-475-619-11	SWITCH BLOCK, CONTROL (SS-8500)	
14	1-475-617-11	SWITCH BLOCK, CONTROL (FK-8500) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
14	1-475-617-31	SWITCH BLOCK, CONTROL (FK-8500)(TRV35E)	
14	1-475-617-51	SWITCH BLOCK, CONTROL (FK-8500)(TRV35)	
14	1-475-617-71	SWITCH BLOCK, CONTROL (FK-8500) (TRV65/TRV65PK/TRV615)	
14	1-475-618-41	SWITCH BLOCK, CONTROL(FK-8500) (TRV85/TRV815/TRV93)	
19	1-467-574-21	REMOTE COMMANDER (RMT-708)	
154	1-475-621-11	SWITCH BLOCK, CONTROL (MR-8500)	
164	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
204	1-475-620-11	SWITCH BLOCK,CONTROL (MF-8500) (EXCEPT TRV85/TRV815/TRV93)	
214	1-783-240-11	CABLE, FLEXIBLE FLAT (FFC-236)	
258	1-668-963-41	FP-642FLEXBLE BOARD	
259	1-958-332-11	HARNESS (DP-71)(TRV85/TRV815/TRV93)	
308	1-668-963-11	FP-642 FLEXIBLE BOARD	
309	1-958-379-11	HARNESS (DP-70) (EXCEPT TRV85/TRV815/TRV93)	
362	1-668-962-11	FP-638 FLEXIBLE BOARD (TRV93)	
408	1-783-241-11	CABLE,FLEXIBLE FLAT (FFC-235) (EXCEPT TRV93)	
452	1-668-957-11	FP-621 FLEXBLBOARD	
457	1-668-956-11	FP-620 FLEXIBLE BOARD	
458	1-668-960-11	FP-629 FLEXIBLE BOARD	
461	1-668-961-11	FP-632 FLEXIBLE BOARD (TRV93)	
463	1-774-867-31	CONNECTOR,EXTERNAL(HOT SHOE)8P (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
464	1-668-978-11	FP-633 FLEXIBLE BOARD (TRV65/TRV65PK/TRV85/TRV615/TRV815)	
467	1-668-958-11	FP-622 FLEXIBLE BOARD	
508	1-694-384-11	TERMINAL BOARD, BATTERY	
510	1-668-959-11	FP-623 FLEXBLE BOARD	
514	1-758-084-21	FILTER BLOCK, OPTICAL (EXCEPT TRV15/TRV15PK/TRV15E/TRV15EP)	
514	1-758-133-21	FILTER BLOCK, OPTICAL (TRV15/TRV15PK/TRV15E/TRV15EP)	
516	8-848-722-01	DEVICE, LENS LSV-600A(SOC) (TRV35/TRV35E/TRV65/TRV65PK/TRV615/TRV85/TRV815/TRV93)	
516	8-848-724-01	DEVICE, LENS LSV-601A(SOC) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
551	8-848-722-01	DEVICE, LENS LSV-600A(SOC) (TRV35/TRV35E/TRV65/TRV65PK/TRV615/TRV85/TRV815/TRV93)	
551	8-848-724-01	DEVICE, LENS LSV-601A(SOC) (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
762	1-657-786-13	FP-221 FLEXIBLE BOARD	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
D001	8-719-988-42	DIODE GL453	
IC401	A-7030-862-A	CCD BLOCK ASSY (TRV15/TRV15PK)	
IC401	A-7030-865-A	CCD BLOCK ASSY (TRV25/TRV25PK/TRV215/TRV35/TRV65/TRV65PK/TRV615/TRV85/ TRV815/TRV93)	
IC401	A-7030-871-A	CCD BLOCK ASSY (TRV35E)	

Ref. No	Part No	Description	Remark
IC401	A-7030-874-A	CCD BLOCK ASSY (TRV15E/TRV15EP)	
J001	1-565-276-31	JACK, ULTRA SMALL 1P (LANC)	
LCD901	1-803-032-21	INDICATOR MODULE, LIQUID CRYST (TRV85/TRV815)	
LCD901	1-803-035-21	INDICATOR MODULE, LIQUID CRYST (TRV35/TRV65/TRV65PK/TRV615/TRV35E)	
LCD901	1-803-037-21	INDICATOR MODULE, LIQUID CRYST (TRV93)	
LCD901	1-803-040-21	INDICATOR MODULE, LIQUID CRYST (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
LCD902	8-753-023-37	LCX024AK	
M901	A-7048-851-A	DRUM ASSY (DGH-0D5A-R)(PAL) (TRV15E/TRV15EP/35E)	
M901	A-7048-842-A	DRUM ASSY (DGH-0E1A-R)(NTSC)(5HEAD) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
M901	A-7048-870-A	DRUM ASSY (DGH-0E3A-R)(NTSC)(3HEAD) (TRV15/TRV15PK/TRV25/TRV25PK/TRV35TRV215)	
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
M905	1-763-047-11	MOTOR, FOCUS STEPPING	
M906	1-763-046-11	MOTOR, ZOOM STEPPING	
MIC901	1-542-312-11	MICROPHONE (L-CH)	
MIC902	1-542-312-11	MICROPHONE (R-CH) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
△ ND5351	1-517-414-51	FLUORESCENT TUBE (0 55 INCH)(TRV93)	
△ ND801	1-517-753-11	TUBE, FLUORESCENT,COLD CATHODE (TRV93)	
△ ND801	1-517-754-11	TUBE, FLUORESCENT,COLD CATHODE (TRV85/TRV815)	
△ ND801	1-517-751-11	TUBE, FLUORESCENT,COLD CATHODE (TRV15/TRV15PK/TRV15E/TRV15EP/TRV25/TRV25PK/TRV215)	
△ ND801	1-517-752-11	TUBE, FLUORESCENT,COLD CATHODE (TRV35/TRV65/TRV65PK/TRV615/TRV35E)	
△ ND802	1-517-759-11	LIGHT, BACK	
S001	1-692-614-11	SWITCH, PUSH (3 KEY) (Hi8 MP, ME/MP, REC PROOF)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY)(C C LOCK)	
S003	1-572-688-11	SWITCH, PUSH (1 KEY) (EJECT)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	
SE451	1-803-041-11	SENSOR, ANGULAR VELOCITY (YAW)	
SE452	1-803-041-21	SENSOR, ANGULAR VELOCITY (PITCH)	
SP901	1-504-753-21	SPEAKER (2 8CM)(TRV85/TRV815/TRV93)	
SP901	1-505-291-11	SPEAKER (DIA 2 8CM) (EXCEPT TRV85/TRV815/TRV93)	
△ V901	1-452-673-31	CRT ASSY (M01KXX90WB) (EXCEPT TRV93)	
△ VL001	1-517-760-11	LIGHT BLOCK, VIDEO (TRV93)	

ACCESSORIES & PACKING MATERIALS

△	1-467-574-21	REMOTE, COMMANDER (RMT-708)
△	1-475-599-11	ADAPTOR, AC (AC-L10)
△	1-569-008-11	ADAPTOR, CONVERSION 2P (TRV15 E,HK/TRV15PK/TRV25PK/TRV35 E,HK/TRV35E E,HK)
△	1-573-856-11	ADAPTOR, CONVERSION 2P (TRV35,JE/TRV35E,JE)
	1-574-039-21	CORD, CONNECTION (A/V connecting cable (Monaural), 1 5m) (TRV15/15PK/TRV25/TRV25PK/TRV215/TRV35/TRV15E/TRV35E)

Be sure to read "Note on the CCD Imager replacement" on page 4-9 when changing the CCD imager.

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Ref. No.	Part No.	Description	Remark
*△	1-575-131-11	CORD, POWER (TRV15 E,HK/TRV15PK/TRV25PK/TRV35 E,HK/TRV15E AEP,EE,NE,RU/ TRV35E AEP,EE,NE,RU,E)	
	1-575-334-11	CORD, CONNECTION (A/V connecting cable (Stereo), 1.5m) (TRV65/TRV65PK/TRV85/TRV93/TRV615/TRV815)	
△	1-696-819-11	CORD, POWER (TRV35E AUS)	
△	1-751-676-11	CORD, POWER (TRV15 US,CND/TRV25/TRV215/TRV65/TRV615/TRV85)	
	1-764-622-11	ADAPTOR, CONVERSION 21 Pin adaptor (VMC-89) (TRV15E/TRV35E AEP,EE,NE,RU,UK)	
△	1-769-608-11	CORD, POWER (TRV15 E,HK/TRV15PK/TRV25PK/TRV35 E,HK/TRV15E AEP,EE,NE,RU/ TRV35E AEP,EE,NE,RU,E)	
△	1-770-019-11	ADAPTOR, CONVERSION PLUG 3P (TRV15 HK/TRV35 HK)	
△	1-775-549-21	CORD, POWER (TRV15 US,CND/TRV25/TRV215/TRV65/TRV615/TRV85/TRV815/TRV93)	
△	1-782-476-11	CORD, POWER (TRV35E CN)	
△	1-783-374-11	CORD, POWER (TRV15E UK/TRV35E UK,HK)	
	3-861-891-11	MANUAL (3), INSTRUCTION (ENGLISH) (TRV85/TRV815/TRV93)	
	3-861-891-21	MANUAL (3), INSTRUCTION (FRENCH)(93 CND)	
	3-861-901-11	MANUAL, INSTRUCTION (ENGLISH) (TRV15 US,CND/TRV25/TRV215/TRV65/TRV615)	
	3-861-901-21	MANUAL, INSTRUCTION (FRENCH) (TRV15 CND/TRV25 CND/TRV215 CND/TRV65 CND/TRV615 CND)	
	3-861-901-31	MANUAL, INSTRUCTION (ENGLISH) (TRV15 E,HK/TRV15PK/TRV25PK/TRV35 E,HK)	
	3-861-901-41	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE) (TRV15 E,HK/TRV15PK/TRV25PK/TRV35 E,HK)	
	3-861-901-51	MANUAL, INSTRUCTION (CHINESE) (TRV15 E/TRV15PK/TRV25PK/TRV35 E)	
	3-861-901-61	MANUAL, INSTRUCTION (KOREAN)(TRV35 JE)	
	3-861-902-11	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TRV15E EE,NE,RU,UK/TRV35E EE,NE,RU,UK)	
	3-861-902-21	MANUAL, INSTRUCTION (SPANISH, PORTUGUESE)(TRV35E AEP)	
	3-861-902-31	MANUAL, INSTRUCTION (GERMAN, ITALIAN) (TRV15E AEP/TRV35E AEP)	
	3-861-902-41	MANUAL, INSTRUCTION (FRENCH, DUTCH) (TRV15E AEP/TRV35E AEP)	
	3-861-902-51	MANUAL, INSTRUCTION (SWEDISH, POLISH) (TRV15E EE,NE,RU/TRV35E EE,NE,RU)	
	3-861-903-11	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN) (TRV35 E,HK,AUS,CN)	
	3-861-903-21	MANUAL, INSTRUCTION (FRENCH, GERMAN) (TRV35E E,HK,CN)	
	3-861-903-31	MANUAL, INSTRUCTION (ARABIC, PERSIAN) (TRV35E E,CN)	
	3-861-903-41	MANUAL, INSTRUCTION (CHINESE)(TRV35E HK)	
	3-861-903-51	MANUAL, INSTRUCTION (CHINESE)(TRV35E E,CN,JE)	
	3-971-463-01	LABEL, FIRE CAUTION DISCERN (TRV15 US,CND/TRV25/TRV65/TRV85/TRV93 US)	
	3-987-015-01	BELT (VW), STRAP	
*	3-988-397-11	INDIVIDUAL CARTON (TRV15 US,CND)	
*	3-988-397-21	INDIVIDUAL CARTON (TRV25)	
*	3-988-397-31	INDIVIDUAL CARTON (TRV215 US)	

Ref. No.	Part No.	Description	Remark
*	3-988-654-01	INDIVIDUAL CARTON (TRV65)	
*	3-988-654-21	INDIVIDUAL CARTON (TRV615)	
*	3-988-654-81	INDIVIDUAL CARTON (TRV15 E,HK)	
*	3-988-654-91	INDIVIDUAL CARTON (TRV35)	
*	3-988-656-01	INDIVIDUAL CARTON (TRV85)	
*	3-988-960-01	BAG, CARRY (TRV15EP/TRV15PK/TRV25PK/TRV65PK)	
	A-7092-699-A	CASE (L) ASSY, BATTERY (TRV93 CND)	
	A-7092-936-A	CASE (L) ASSY (U), BATTERY (TRV15 US,CND/TRV25/TRV65/TRV85/TRV93 US)	
**	NP-F330	BATTERY PACK	
Note	**	MARKPARTSIS AVAILABLE AS AN OPTIONAL ACCESSORY	

The components identified by
mark △ or dotted line with mark
△ are critical for safety
Replace only with part number
specified.

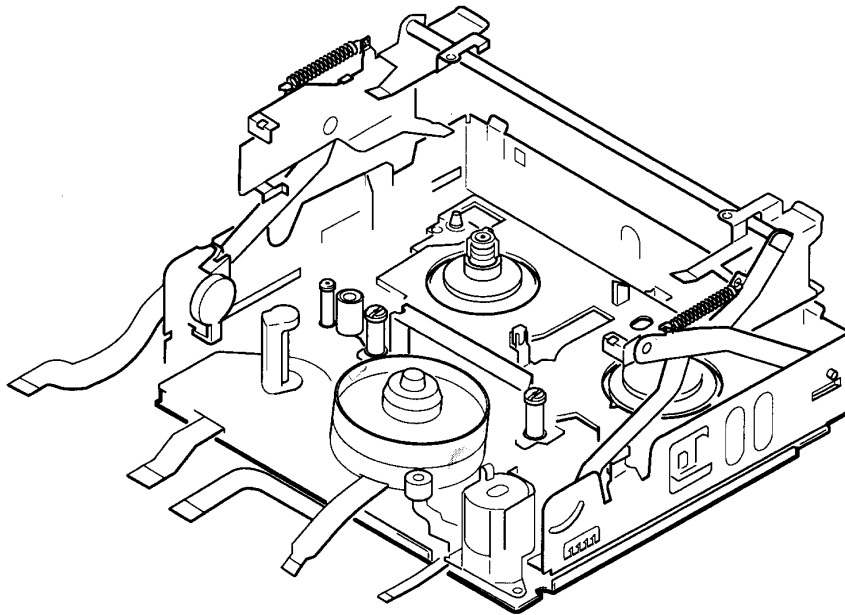
Les composants identifiés par une
marque △ sont critiques pour la
sécurité
Ne les remplacer que par une
pièce portant le numéro spécifié

8mm Video MECHANICAL ADJUSTMENT MANUAL VII

B MECHANISM

Video8

Use this mechanical adjustment manual VII together with the service manual of the respective models.



8 MECHANISM DECK
SONY®

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and parts list, refer to the Supplement-1 Manual.

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

For the disassembly procedures of the cabinet and printed wiring boards, please refer to the "DISASSEMBLY" section of the service manual of the respective models.

To re-assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.

The mechanisms are adjusted while set in the USE mode of operation. (Refer to the "Mode Selector Operation Procedure of the Supplement-1 Manual for how to enter the USE mode.)

1-1. Cassette Compartment Block Assy

1. Disassembly Procedure (Refer to Fig. 1.)

- 1) Set the mechanism to USE mode.
- 2) Confirm that the Cassette Compartment Block Assy is opened. If it is not opened, open it referring to Fig. a.
- 3) Remove the claws (A) and (B) of the Damper Assy ① from the chassis.
- 4) Remove the washer ② from the shaft of the Cassette Compartment near the Drum, next to the loading motor. Remove the shaft of the arm from the slot.

- 5) Remove the shaft of the arm from the slot (C) of the Cassette Compartment near the Drum, next to the capstan motor. (Refer to Fig. b)
- 6) Lift up the Cassette Compartment at the Drum side in the direction of the arrow (D), and remove the arm shaft of the Cassette Compartment from the LS Chassis (4) near the Reel Tables. Remove the Cassette Compartment Assy (3) in the direction of the arrow (E).

2. Precautions During Re-Assembling

- 1) After attaching the Tension Spring, confirm that the straight portion at the end of the curved hook of the spring is positioned inside the mechanism. (Refer to Fig. c)
- 2) Confirm that the claw in the bottom of the shaft near the Reel Table of the Cassette Compartment is hooked to the LS Chassis.
- 3) Confirm that the claw of the Damper Assy is hooked to the LS Chassis. (Refer to Fig. b)

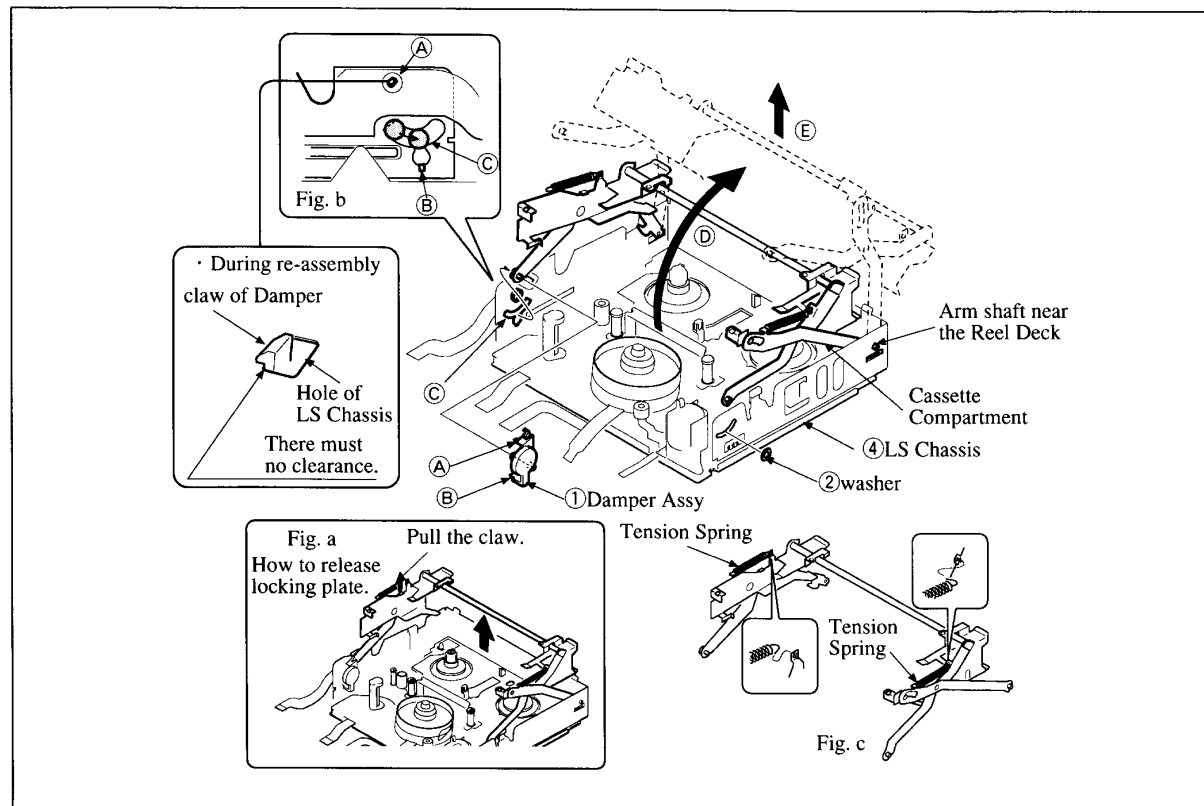


Fig. 1

1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed

1. How to load a cassette tape (Refer to Fig. 2):

- 1) While referring to section "DISASSEMBLY" of the respective service manual, turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
- 2) Connect the adjustment remote commander (Ref. No. J-10) and establish the TEST mode.

Example of establishing the TEST mode: model CCD-TR420E/TR440E.

Select page: 6, address: 00, set data :01 and press the PAUSE button to release protection.

Select page: 7, address: 01, set data: 01 and press the PAUSE button.

After tape loading or other desired operations of mechanism are completed, be sure to perform the following:

Select page: F, address: 01, set data :00 and press the PAUSE button.

Select page: 6, address: 00, set data: 00 and press the PAUSE button.

- 3) Press the push-switch ① knob in the direction of the arrow which sets the machine into loading mode.

☆ PB, FF/REW and CUE/REV operations are possible.

2. How to establish RECORD mode:

- 1) Press pin of the push-switch ② (ON state) and keep the ON state by fixing with adhesive tape ③.
- 2) Turn the main power switch ON (select VTR or CAMERA position of in case of camera).
- 3) Set the RECORD switch to ON.

(When the TEST mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

- 1) Press the EJECT switch to ON.

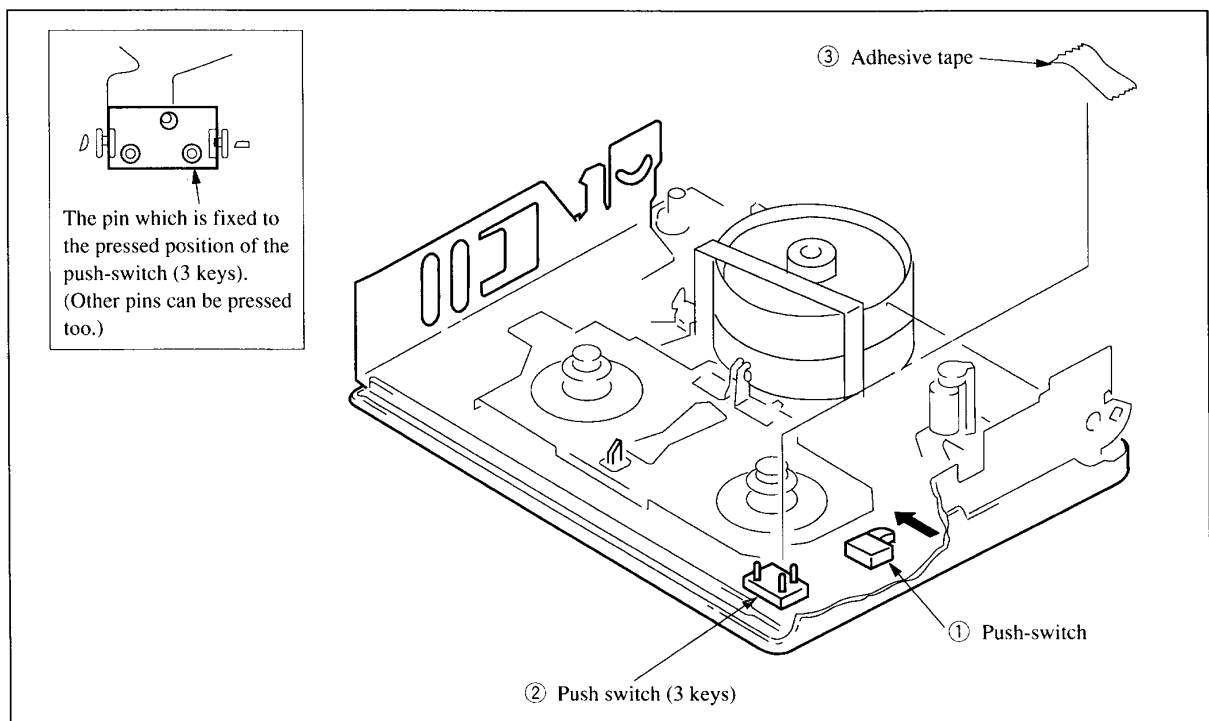


Fig. 2

2. PERIODIC CHECK AND MAINTENANCE ITEMS

- Perform the following periodic check and maintenance to ensure that the machine functions continue to operate in peak condition, and to protect the tape and mechanism deck. After completing repair work, perform the following maintenance items regardless of how long the user's machine has been used.

2-1. Rotary Drum Assy Cleaning

Press the cleaning piece (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly on the Rotary Drum Assy. Gently turn the Rotary Drum Assy slowly by hand counter-clockwise to clean the rotary drum.

Caution: Never attempt to turn the head drum motor by turning the main power ON. Also, never turn the drum clockwise by hand. In addition, never move the cleaning piece vertically with respect to the head tips, since this will damage them. Never clean the head drum in any way other than as described above.

2-2. Tape Path Cleaning (Refer to Fig. 3.)

- 1) Set the mechanism to **USE** mode. Clean the tape path system (TG-1, TG-2, TG-3, TG-4, pinch roller, capstan shaft) and lower drum using a very thin cotton swab (Ref. No. J-3) moistened with cleaning fluid.

Caution: Take care that the very thin cotton swab (Ref. No. J-3) does not touch the oil or grease of the various link mechanisms.

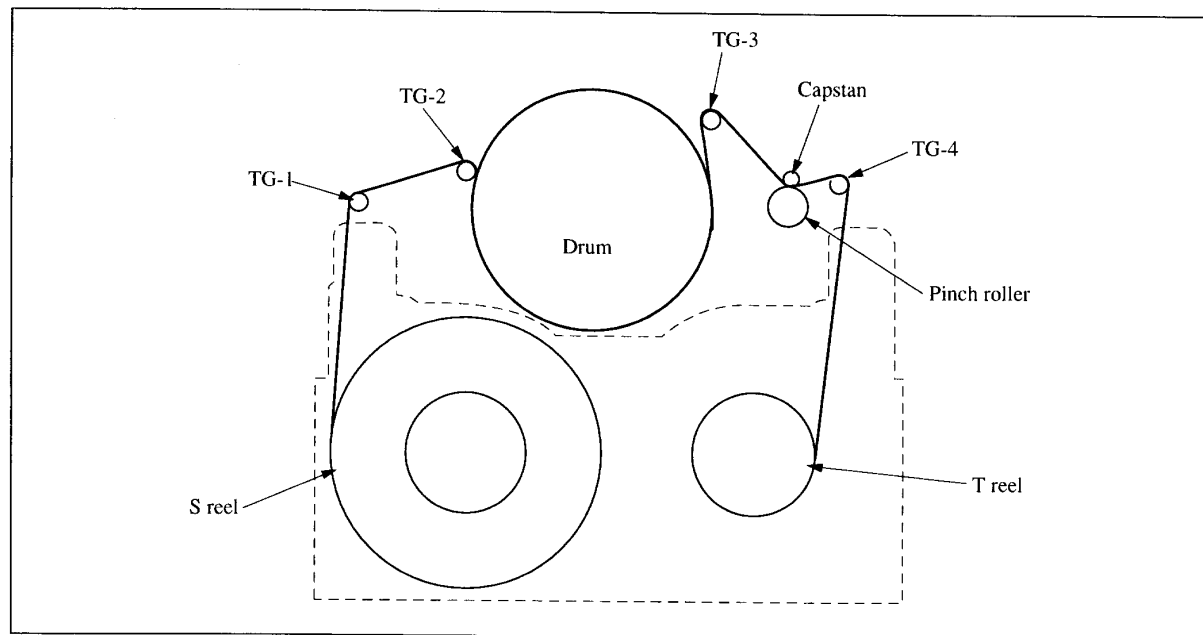


Fig. 3

2-3. Periodic Check Items

Maintenance and Inspection Points		Operating Hours										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
Drive System	Cleaning of tape running surface	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Cleaning and degaussing of Rotary Drum Assy	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Timing Belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-965-546-01
	Capstan Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Take great care not to let any oil contact the tape running surface.
	Change Gear Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Relay Pulley Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	X-3945-401-1
Performance Check	Loading Motor	—	☆	—	☆	—	☆	—	☆	—	☆	
	Abnormal Sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Tape Hold-back Tension Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake System	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD } Torque Measurement RVS }	—	☆	—	☆	—	☆	—	☆	—	☆	

○Cleaning ◎Lubrication ☆Check

Note: When overhauling the machine, replace the parts while referring to the above table.

Note: Regarding oil

- Be sure to use the specified oil. (If the viscosity and other characteristics are different, various troubles may arise.)

Oil: Sony part No. 7-661-018-18

(Mitsubishi diamond oil hydro fluid NT-68)

- For the oil lubricated bearings, use oil free from dust or foreign materials. If the oil contains any dust or foreign material, the bearings will wear out quickly or burn out.
- One drop of oil is the amount of oil which forms at the tip of a stick of 2 mm diameter.

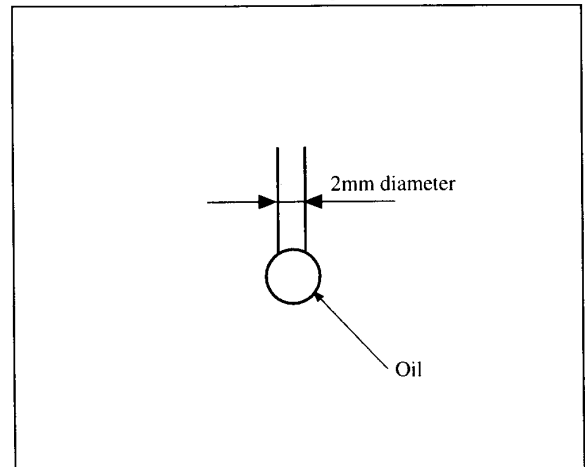


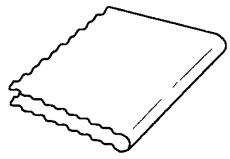
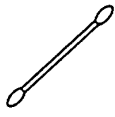
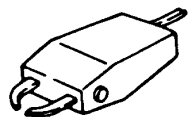
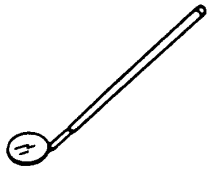
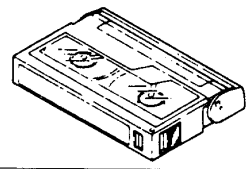
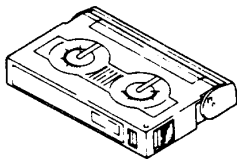
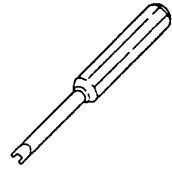
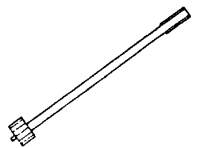
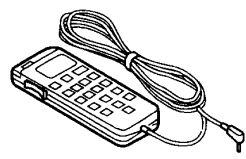
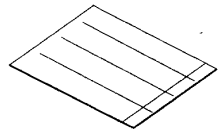
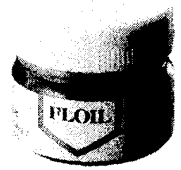
Fig. 4

2-4. Service Tool List

Ref. No.	Name	Parts Code	Tool Stamp	Applications
J-1	Cleaning fluid	Y-2031-001-0	—	
J-2	Cleaning piece	2-034-697-00	—	
J-3	Very thin cotton swab (made by Nippon Cotton Swab Inc. (P752D))		—	
J-4	Head demagnetizer	Commercially available	—	
J-5	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape (NTSC : WR5-1NP) (PAL : WR5-1CP)	8-967-995-02 8-967-995-07	—	Tape path
J-7	FWD/RVS take-up torque cassette	J-6080-824A	GD-2086	
J-8	Screwdriver for tape path adjustment	J-6082-026-A	—	For tape guide adjustment
J-9	FWD/BACK tension adjustment screwdriver	J-6082-187-A	—	
J-10	Remote commander for adjustment	J-6082-053-B	—	Tape path (Setting PATH mode)
J-11	MD process table	J-6082-166-A	—	
J-12	FLOIL Grease SG-941	7-662-001-39	—	
J-13	FLOIL Grease SG-055G	7-651-000-09	—	

Other equipment

- Oscilloscope
- Analog circuit tester (input impedance 20 kΩ)

J-1 	J-2 	J-3 	J-4 
J-5 	J-6 	J-7 	J-8 
J-9 	J-10 	J-11 	J-12 
J-13 			

3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy (Refer to Fig. 5)

1. Disassembly Procedure

- 1) Remove the Torsion Spring ① from the cut-out ①A of the motor holder. Hook it to the claw ①B of the HC Arm.
- 2) Remove the HC Roller Block Assy in the direction shown by ①C.
- 3) Remove the stop washer ①2 and remove the HC Roller Block Assy ①3.

2. Precautions During Re-Assembly

- 1) After attaching the HC Roller Block Assy, confirm that both ends of the torsion spring are hooked to ①A and ①D.
- 2) Align the block so that the cut-out ①E agrees with the rib ①F.

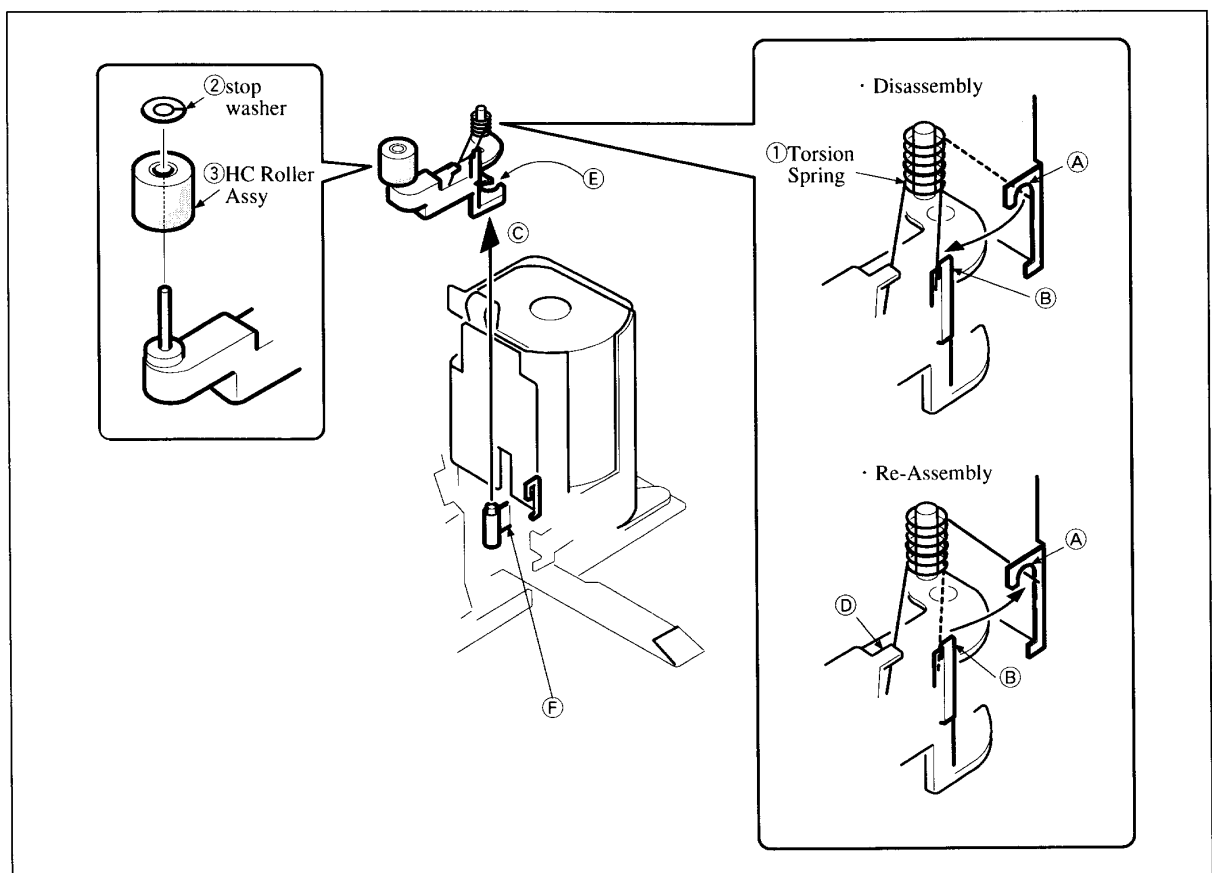


Fig. 5

3-2. Drum Assy (Refer to Fig. 6)

1. Disassembly Procedure

- 1) Set the mechanism to **USE** mode.
- 2) Remove the three screws (M 1.4) ① and remove the Drum Assy ②.

Caution: Be careful not to touch the outer circumference of the drum. (Hold the portions (A) and (B) of the drum assy.)

2. Precautions During Re-Assembly

- 1) Be careful not to touch the outer circumference of the drum. (Hold the portions (A) and (B) of the drum assy.)
- 2) When tightening the three screws (M 1.4), tighten them in the order (C), then (D), then (E).
- 3) After attaching the Drum Assy, perform the steps in section "4. TAPE PATH ADJUSTMENT".

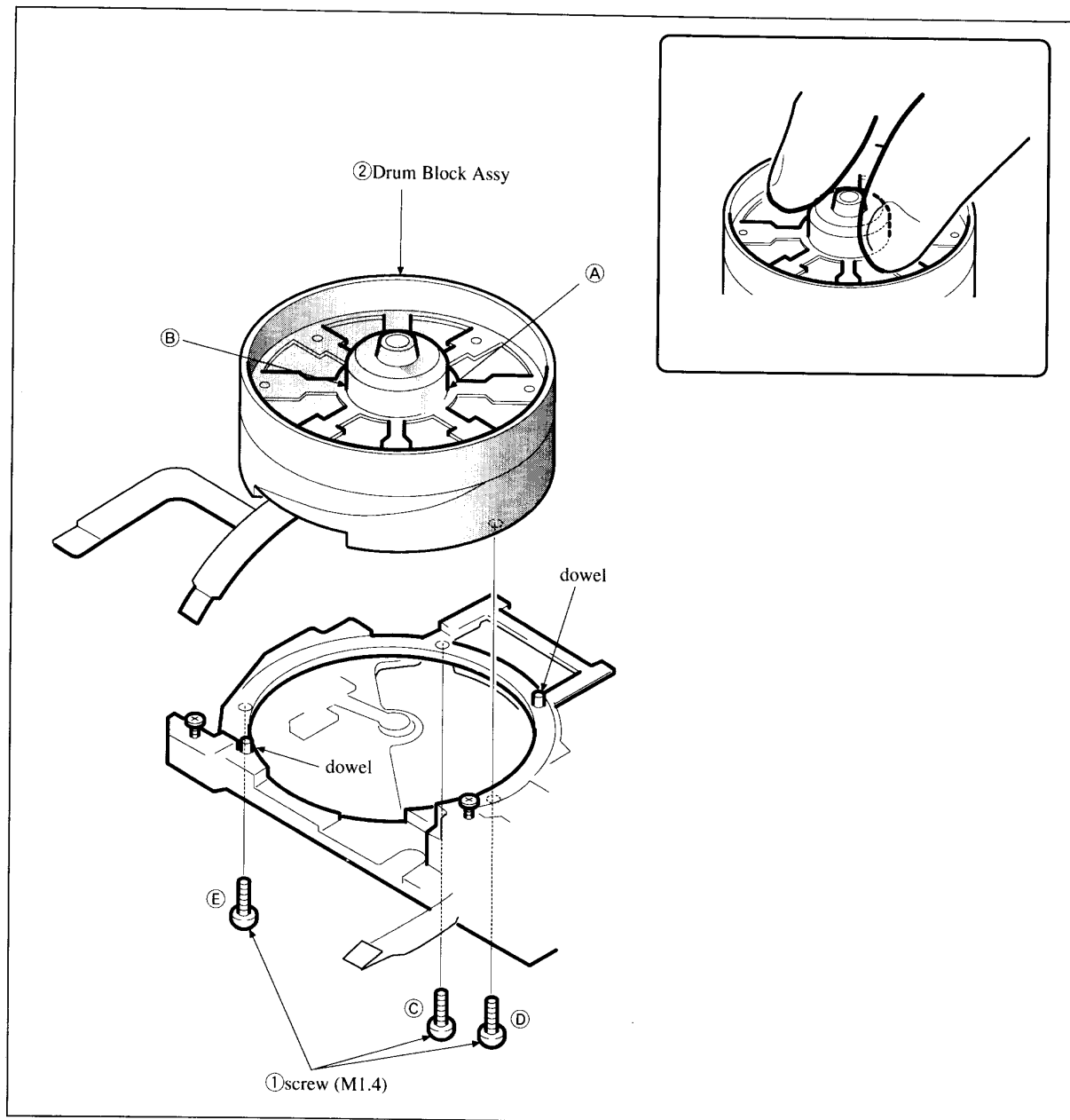


Fig. 6

3-3. Drum Base Block Assy, Shaft Ground (Refer to Fig. 7)

1. Disassembly Procedure

- 1) Remove the Drum Assy referring to section 3-2.
- 2) Remove the three screws (M 1.4×2.5) ① and remove the Drum Base Block Assy ②.
- 3) Remove the screw (M 1.7×1.4) ③ and remove the Shaft Ground ④.

2. Precautions During Re-Assembly

- 1) Do not touch the spring portion of the Shaft Ground ④.
- 2) When tightening the three screws (M 1.4×2.5), tighten them in the order of ①, then ②, then ③.
- 3) After re-assembly is completed, perform the steps in section "4. TAPE PATH ADJUSTMENT".

Caution 1: Do not hold the spring portion of the Shaft Ground ④.

Caution 2: The loading motor can be removed while the mechanism is in this state. However, do not move any other mechanical parts (especially gears and cams around the rotary switch) when removing the loading motor. (Refer to 3-11.)

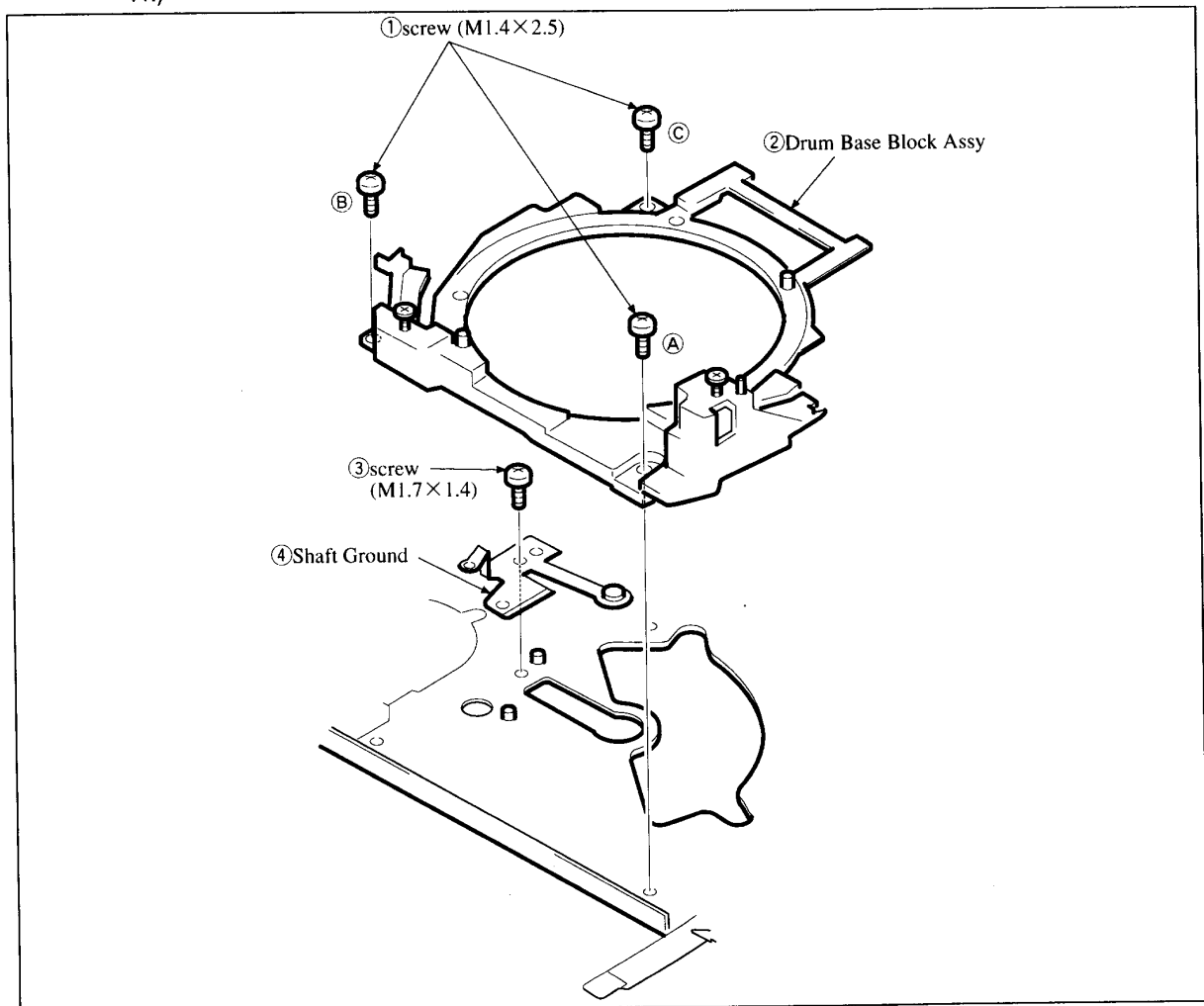


Fig. 7

3-4. Gooseneck Retainer, Gooseneck Gear Assy (Refer to Fig. 8)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the LED ① from the LED holder of the Gooseneck Retainer ③.
(Turn the flexible board 90° outside and remove it upward.)
- 3) Remove the three screws (M 1.4×2.5) ② and remove the Gooseneck Retainer ③.
- 4) Remove the stop washer ④ and remove the Gooseneck Gear Assy ⑤.

2. Precautions During Re-Assembly

- 1) When attaching the Gooseneck Retainer ③, take care that the Gooseneck Retainer ③ does not collide with the tension regulator band. (The tension regulator band must be located inside.)
- 2) Hook the T-side claw on the guide.

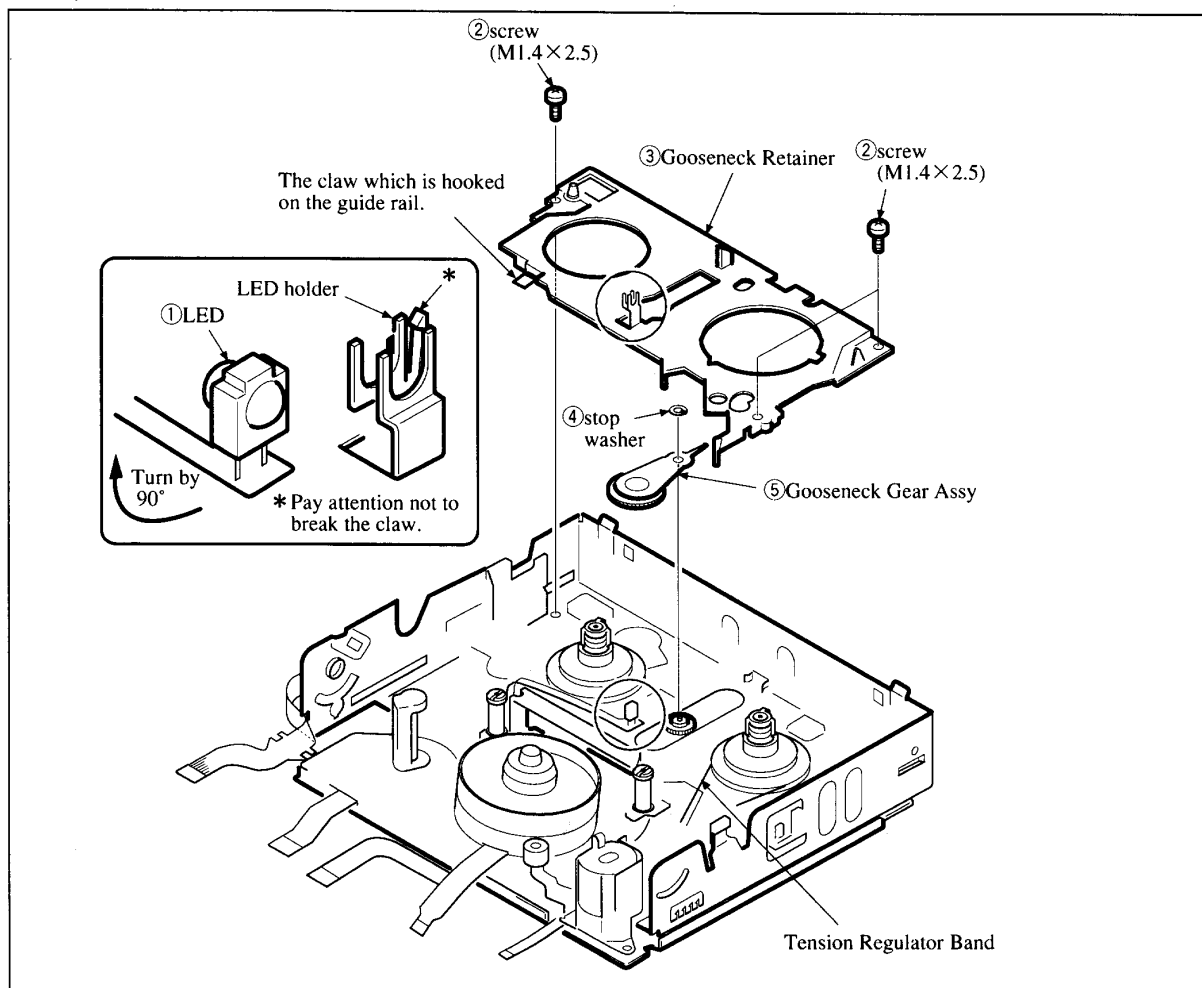


Fig. 8

3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy (Refer to Fig. 9)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 3) Remove the FP-221 flexible board ① from the flexible board holder.
- 4) Remove the stop ring E1.5 ②.
- 5) Remove the two screws (M 1.4×2.5) ③ and remove the LS Chassis Block Assy ④ from the Mechanical Chassis Block ⑤ in the direction of the arrow A.

Note: The Tension Regulator Plate (2) can easily fall into the Mechanical Chassis Block Assy. Take care not to drop it.

2. Precautions During Re-Assembly

- 1) Before attaching the LS Chassis Block Assy, confirm that the respective phase-determining holes have been adjusted for correct phase. Also confirm that the specified locations of the Mechanical Chassis Block Assy and the LS Chassis Block Assy are coated with grease SG-055G (Ref. No. J-13). (Refer to Fig. a)
- 2) When attaching the LS Chassis Block Assy, insert the LS Cam Plate (on the LS chassis side) into the dowel (on the mechanical chassis side). Also insert the TG1 Cam Axis (on the LS chassis side) into the Tension Regulator Plate (2) (on the mechanical chassis side).
- 3) When attaching these block assemblies, attach them while pressing the TG-1 Arm Assy in the direction toward the TG-2 Guide. (Refer to Fig. b)
- 4) Pay attention that the TG-1 Arm is not floated.

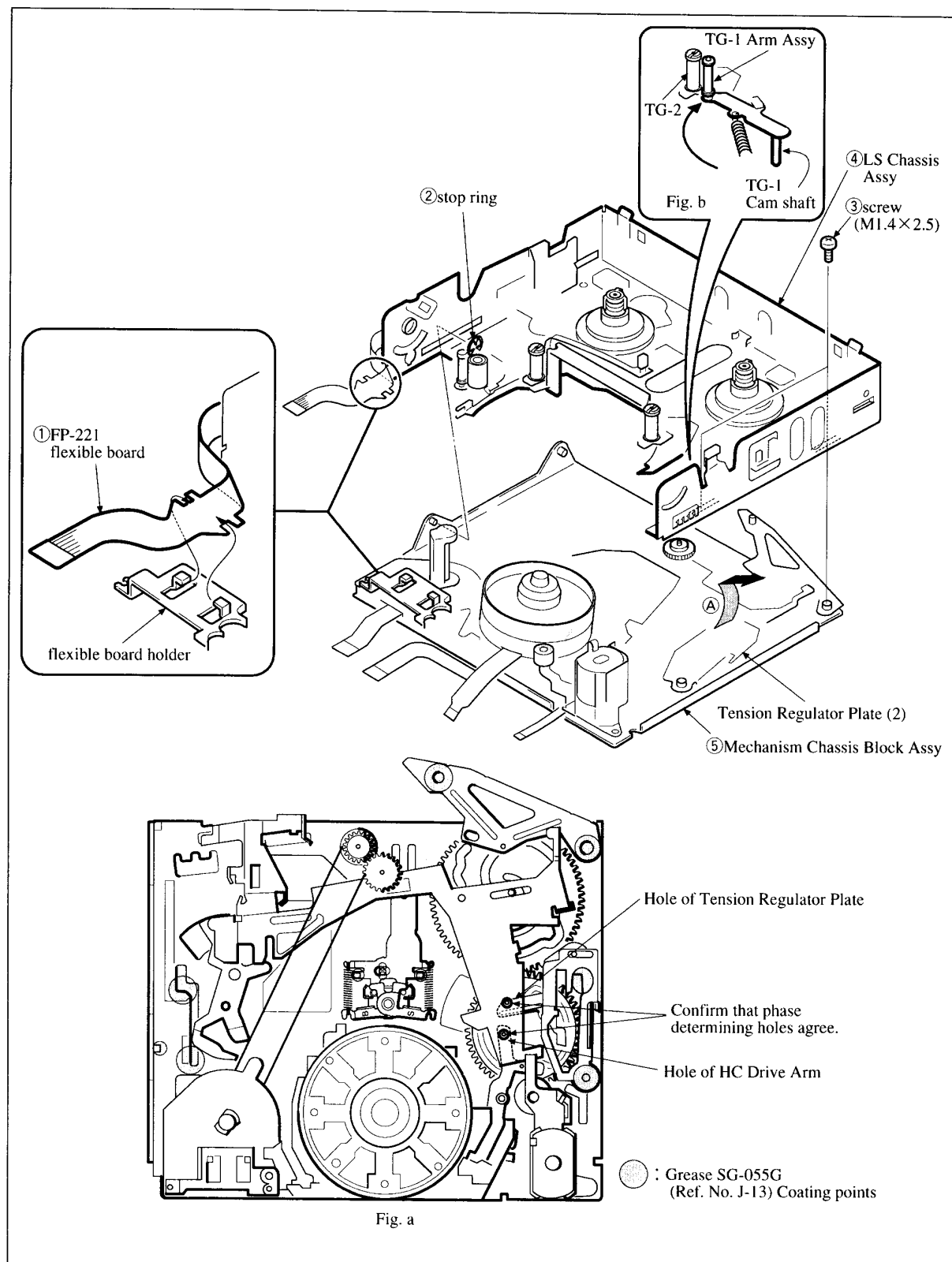


Fig. 9

• PARTS CONSTITUTING THE LS CHASSIS.

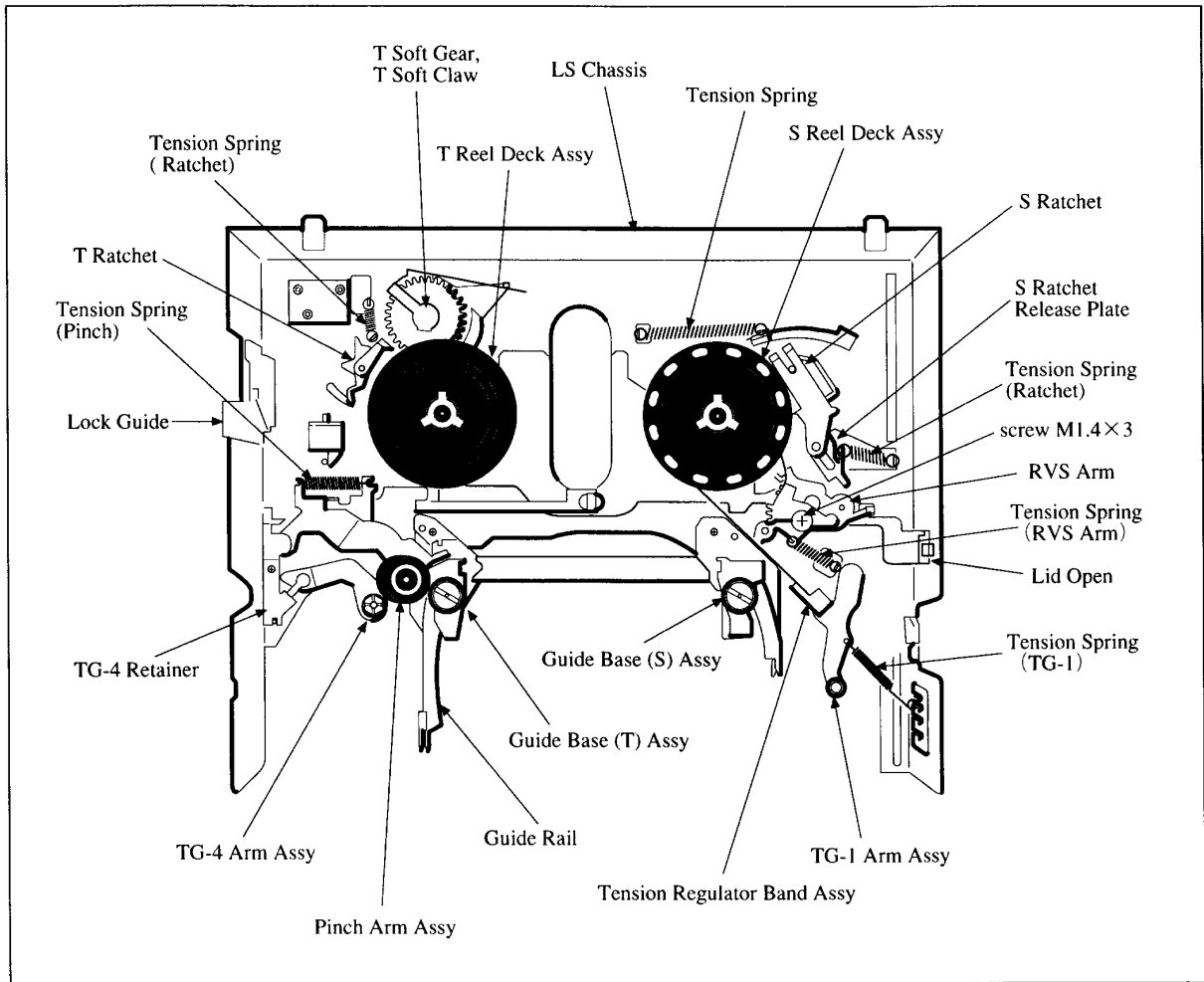


Fig. 10

3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy (Refer to Fig. 11)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 3) Remove the claw of the T Reel Deck Assy ① from the chassis and remove the T Reel Deck Assy from its shaft.
- 4) Remove the Tension Spring (Ratchet) ② from the LS Chassis and turn the T Ratchet ③ in the direction of the arrow ④ and remove it.
- 5) Turn the T Soft Gear Block Assy ④ in the direction of the arrow ⑤ and remove it.

2. Precautions During Re-Assembly

- 1) Confirm that the protrusions of both the T Soft Gear Block Assy and T Ratchet are securely locked to the LS Chassis.
- 2) Be careful not to deform the claw.

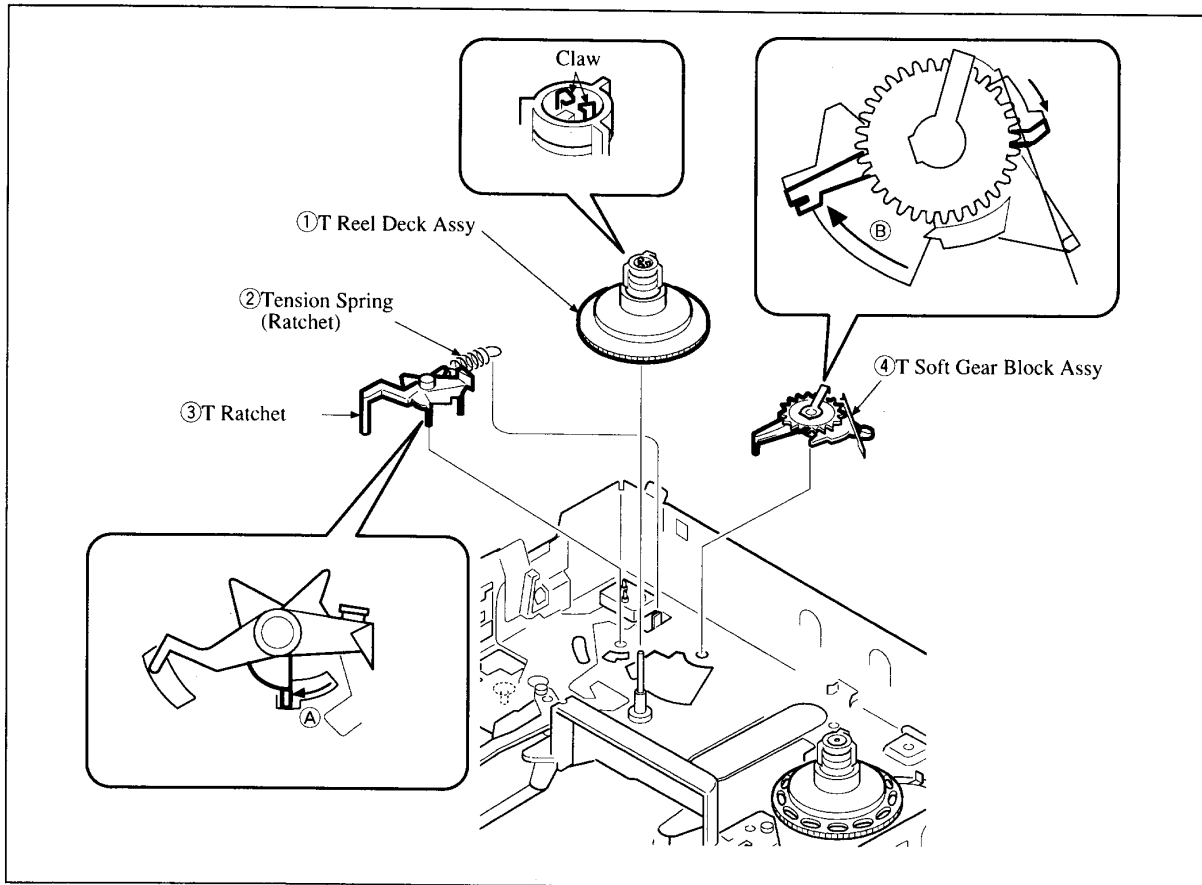


Fig. 11

3-8. Pinch Arm Assy, TG4 Arm Block Assy (Refer to Fig. 13)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 3) Remove the LS Chassis Block Assy referring to section 3-5.
- 4) Remove the Torsion Spring (pinch) ① from an end of Pinch Arm and hook it on the cut-out (A) of the LS Chassis.
- 5) Remove the screw (M 1.4×2.5) ② and remove the TG4 Retainer ③.
- 6) Remove the TG4 Arm Block Assy ④ and remove the Torsion Spring ⑤ while paying attention to the Torsion Spring ⑤.
- 7) Remove the Pinch Arm Assy ⑥. (Caution: The Pinch Press Roller is easy to drop. Pay attention not to drop it.)
- 8) Remove the Torsion Spring (pinch) ① from the cut-out of the LS Chassis in the order of (A) then (B).

2. Precautions During Re-Assembly

- 1) Before attaching these parts, coat the LS chassis pinch arm boss and TG4 arm boss with grease SG-055G (Ref. No. J-13).
- 2) Do not touch the tape guide of the TG4 Arm Block Assy and roller of the Pinch Arm Assy with bare hand.
- 3) After coating the Pinch Press Shaft of the Pinch Arm Assy ③ with grease SG-055G (Ref. No. J-13), attach the Pinch Press Roller.

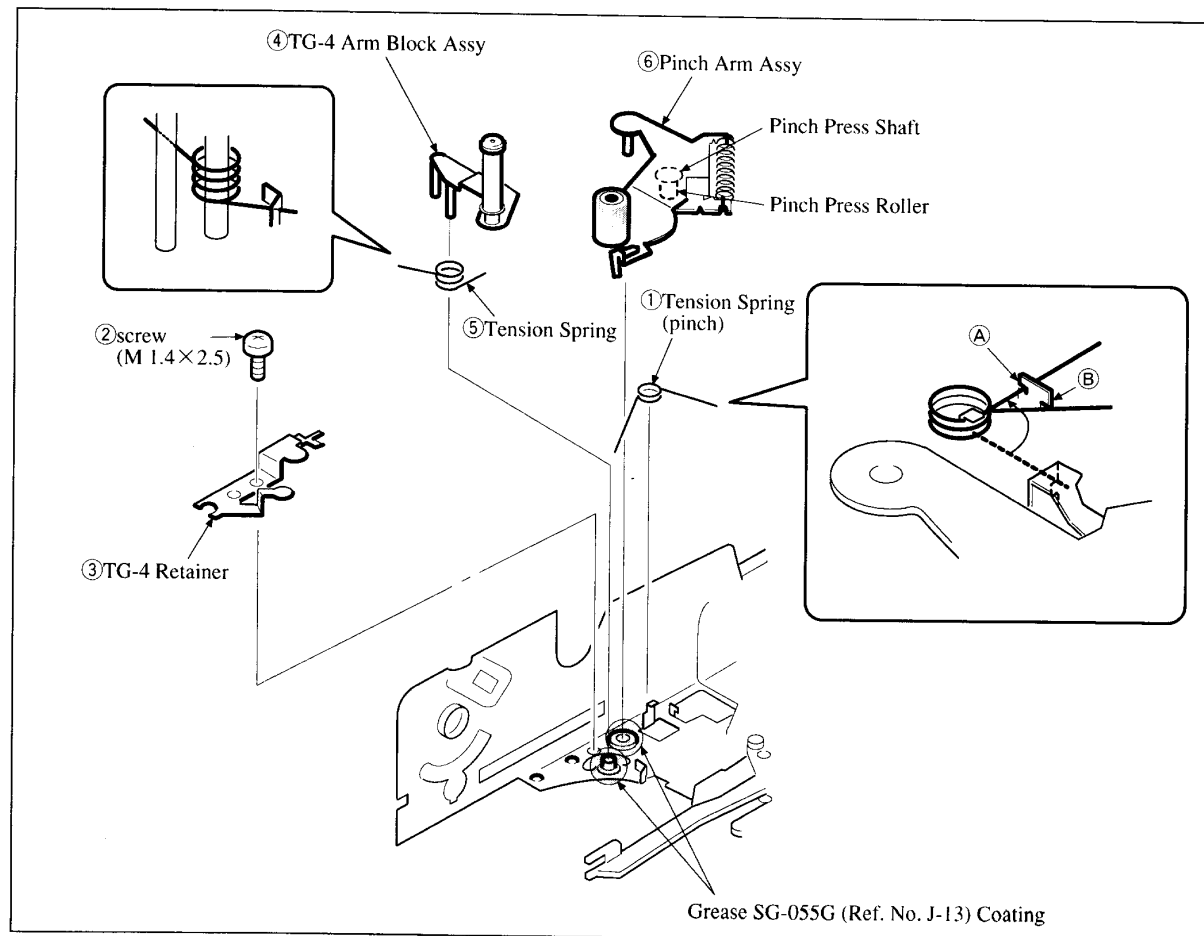


Fig. 13

3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide (Refer to Fig. 14)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 3) Remove the LS Chassis Block Assy referring to section 3-5.
- 4) Remove the two screws (M 1.4×2.5) ① and remove the the LS Cam Plate ②.

In this state, write a mark on the screw ① and on the LS Chassis indicating the position of the LS Cam Plate which helps during re-assembly.

- 5) Remove the LS Guide Cover ③.
- 6) Remove the Lock Guide ④ in the upward direction. (Refer to Fig. a)

- 7) Remove the Lid Open ⑤ in the direction of the arrow ③ while pushing ④ portion.
- 8) Remove the EJ Arm ⑥. (The EJ Arm ⑥ is press-fitted. If the EJ Arm ⑥ is not damaged, it is not necessary to replace.)

2. Precautions During Re-Assembly

- 1) After the captioned parts are attached, confirm that the respective claws and dowels are engaged completely.
- 2) If the EJ Arm ⑥ is removed, be sure to replace it with the new replacement EJ Arm.
- 3) If any mark is not written when removing the LS Cam Plate ②, adjust and attach it as shown in Fig. b.

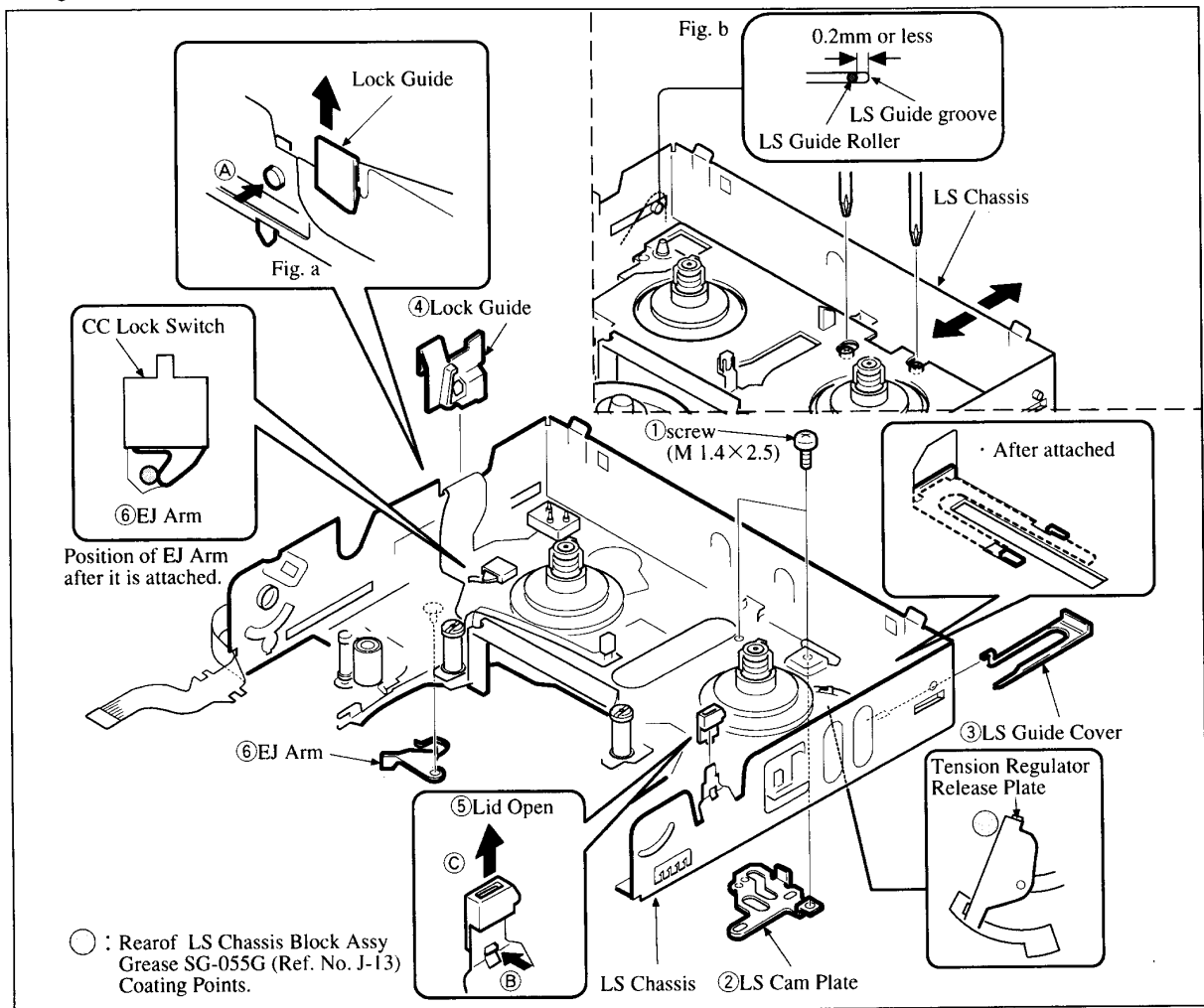


Fig. 14

3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail (Refer to Fig. 15)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 3) Remove the LS Chassis Block Assy referring to section 3-5.
- 4) While pushing the GB Stoppers (S) and (T) in the direction of arrow ①, press the guide arm in the direction of the arrow ②, and turn the Guide Base (S) and (T) Block Assemblies : ① and ② in the direction of the arrow ③ respectively, and remove them.
- 5) Remove the two screws (M 1.4×2.5) ③ and remove the the Guide Rail Assy ④.
- 6) Remove the Stopper (S) and (T) : ⑤ and ⑥, then remove the GB Stopper S and T: ⑦ and ⑧.

2. Precautions During Re-Assembly

- 1) Pay attention not to deform the Guide Rail.
- 2) Do not touch the tape guide of the Guide Base (S) and (T) Block Assemblies with bare hand.
- 3) Pay attention not to deform the Stoppers (S) and (T).
- 4) When attaching the Guide Base (S) and (T) Blocks to the Guide Rail, move back the Guide Bases until the GB Stoppers (S) and (T) are locked. ("Click" sounds.)
- 5) After the captioned parts are attached, perform section "4. TAPE PATH ADJUSTMENT".

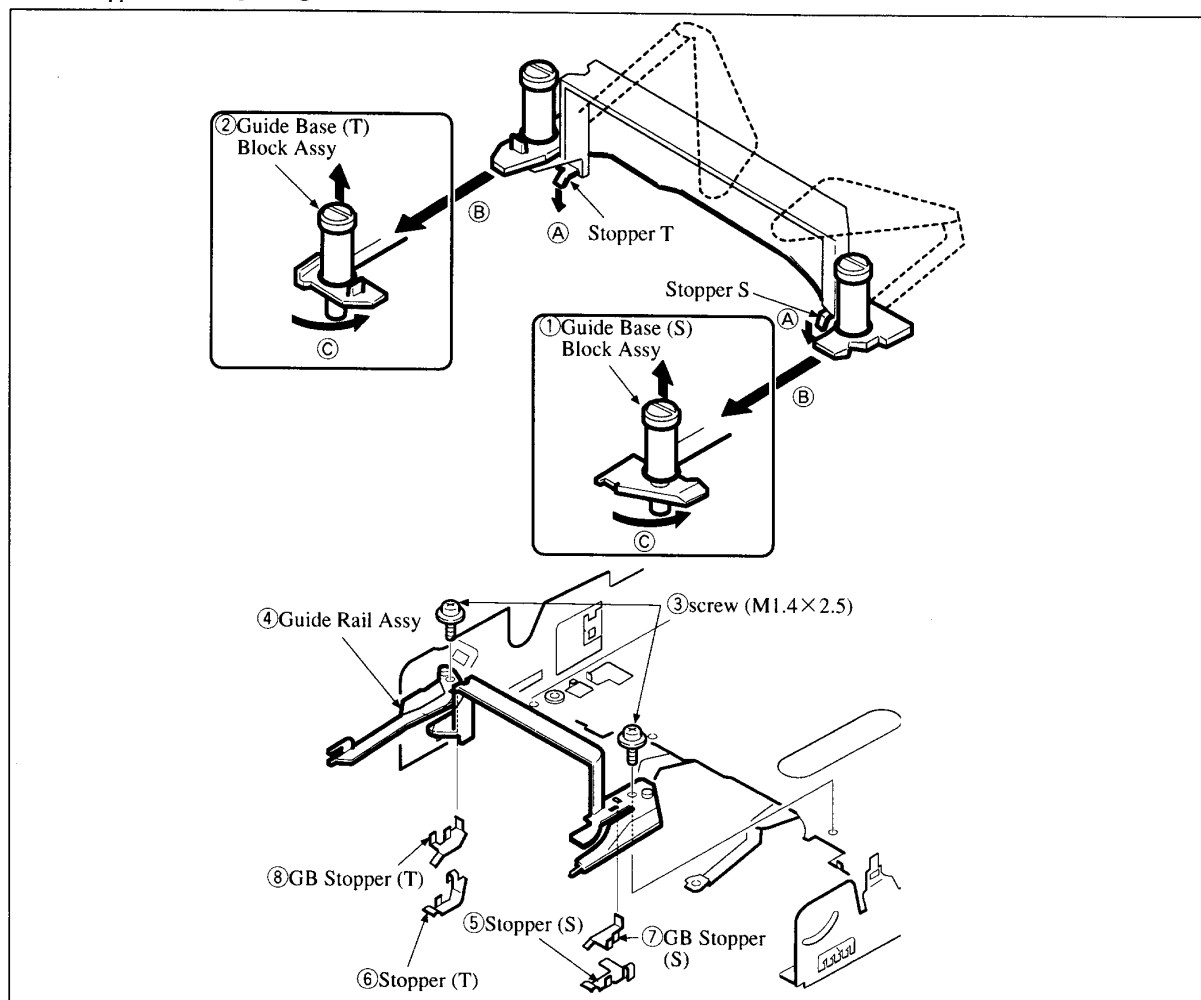


Fig. 15

• PARTS CONSTITUTING THE MECHANISM CHASSIS

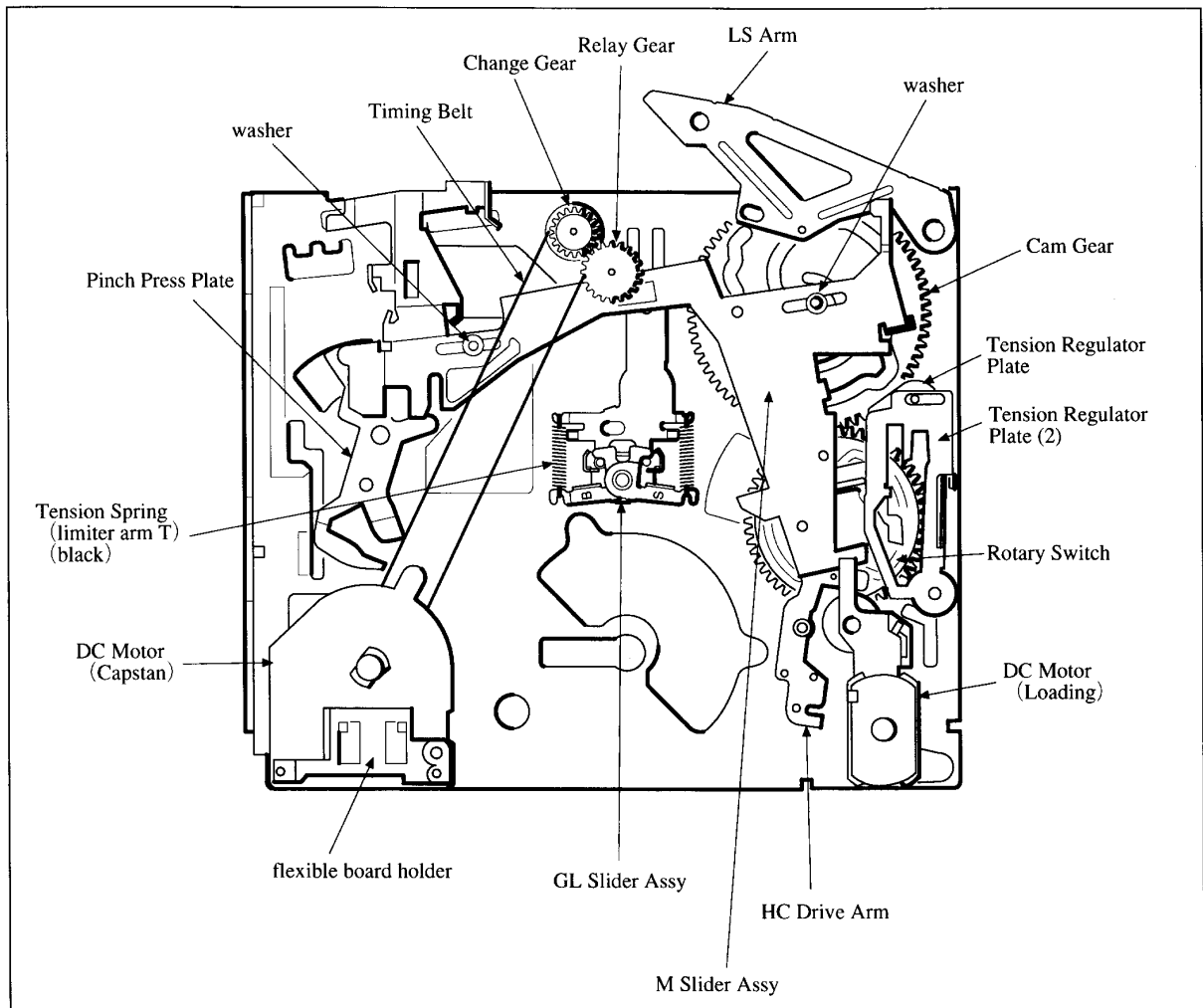


Fig.16

3-11. DC Motor Assy (Loading) (Refer to Fig. 17)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove soldering from the (A) portion.
- 8) Remove the screw (M 1.4×2.5) (1) and remove the Motor Holder Block Assy (2) from the mechanism chassis along with the claw beneath the Motor Holder Block Assy as shown by the arrow (B).
- 9) Remove the Motor Shield (3) in the direction of the arrow (C) (by opening the two ★ star marked points).
- 10) Release the claw on top of the Motor Holder (5) and remove the DC Motor Assy (4) in the direction of the arrow (D).
- 11) Remove the Motor Holder Sleeve (6), Gear A (7) and Worm Shaft (8) in this order.

2. Precautions During Re-Assembly

- 1) Before attaching the Gear A (6), coat the Retainer Shaft (E) with grease SG-055G (Ref. No. J-13).
- 2) After assembling the Motor Holder Block Assy, coat the six locations shown by Fig. a with grease SG-055G (Ref. No. J-13).
- 3) The HC Drive Arm is easy to drop. Confirm that it is attached referring to Fig. 19.

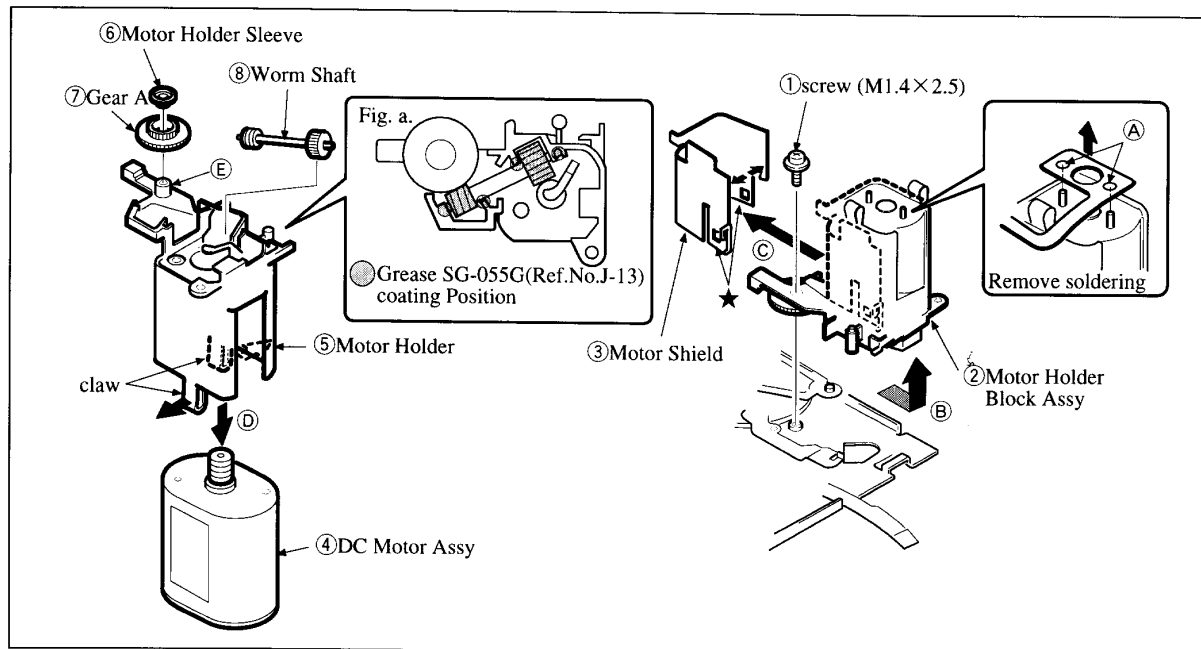


Fig. 17

3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy (Refer to Fig. 18)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC motor referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2 ①.
- 9) Remove the Relay Gear ②.
- 10) Remove the two washers ③. Remove the M Slider Assy ④.

At the point, confirm that the LS Roller ⑤ is not dropped.

2. Precautions During Re-Assembly

- 1) Before attaching the M Slider Assy ④, coat the LS Roller Shaft ① on the back of the M Slider Assy, the Pinch Press Plate Shaft ② and the mechanism chassis M Slider Axis ③ with grease SG-055G (Ref. No. J-13). (Refer to Fig. b)
- 2) While confirming the phase-determining holes, attach the M Slider Assy ④ while paying attention to the claw.
- 3) Attach the Tension Regulator Plate 2 ① inside the Tension Regulator Plate. (Refer to the asterisk * Marked portion of Fig. a)
- 4) Before attaching the Relay Gear ②, coat the mechanism chassis Relay Gear Axis ④ with grease SG-055G (Ref. No. J-13).

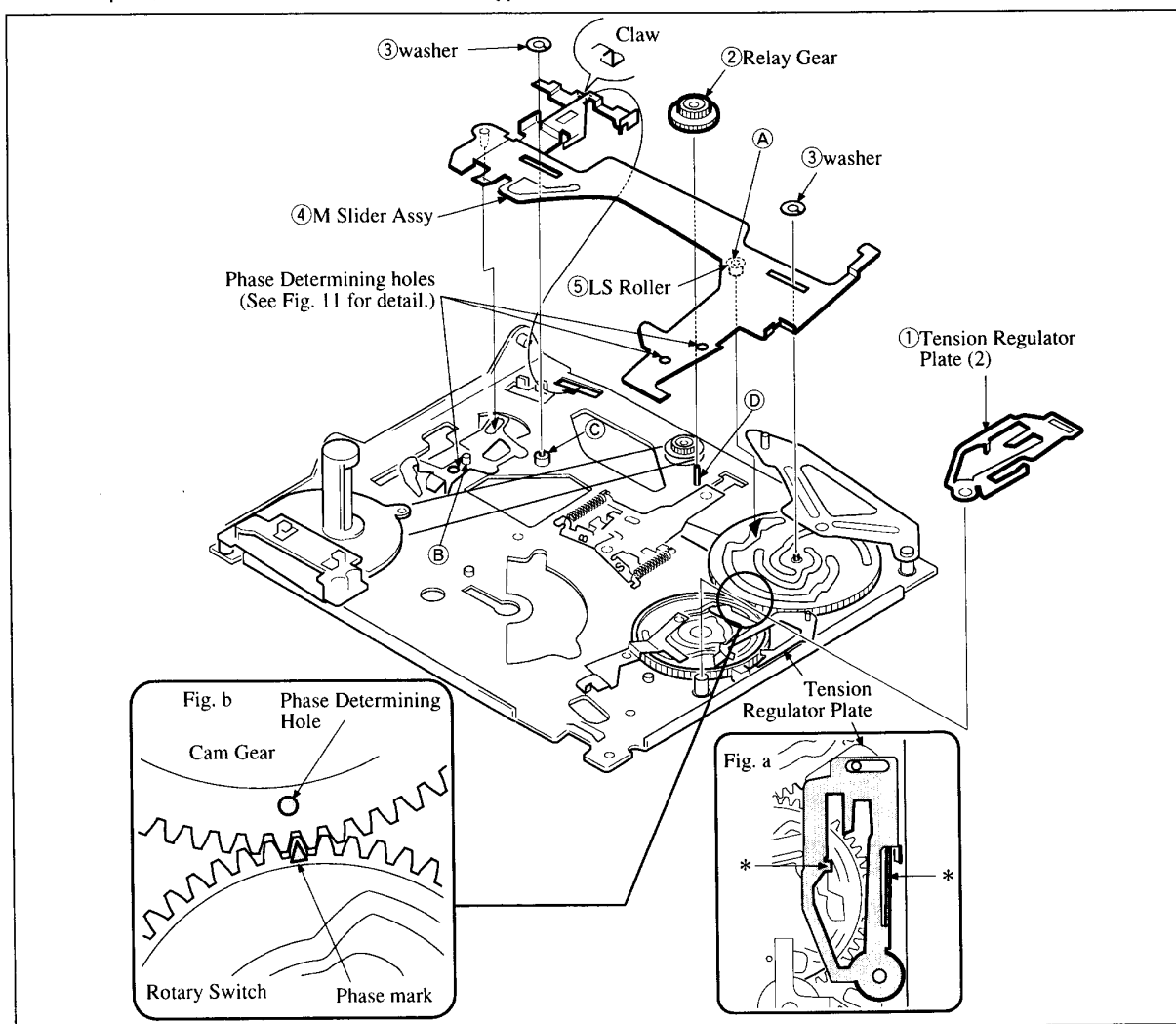


Fig. 18

3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate (Refer to Fig. 19)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC Motor Assy referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
- 9) Remove the LS Arm ①. At this point, confirm that the LS Roller ② is not dropped.
- 10) Remove the HC Drive Arm ③, Pinch Press Plate ④ and Tension Regulator Plate ⑤.

2. Precautions During Re-Assembly

- 1) Before attaching the captioned parts, confirm that phases of the Cam Gear and the Rotary Switch agree. (See Fig. a.)
- 2) Insert the dowel of the Tension Regulator Plate ⑤ into the groove outside the rotary switch.
- 3) Before attaching the Pinch Press Plate ④, check for grease on the mechanism chassis Pinch Press Plate Shaft (A). If grease cannot be found, coat it with grease SG-055G (Ref. No. J-13). After attaching the Pinch Press Plate ④, align its phase hole until it agrees with the phase-determining hole on the mechanism chassis.
- 4) Insert the dowel of the HC Drive Arm ③ into the groove inside the rotary switch.
- 5) Before attaching the LS Arm ①, coat the LS roller shaft of the LS Arm ① with grease SG-055G (Ref. No. J-13).

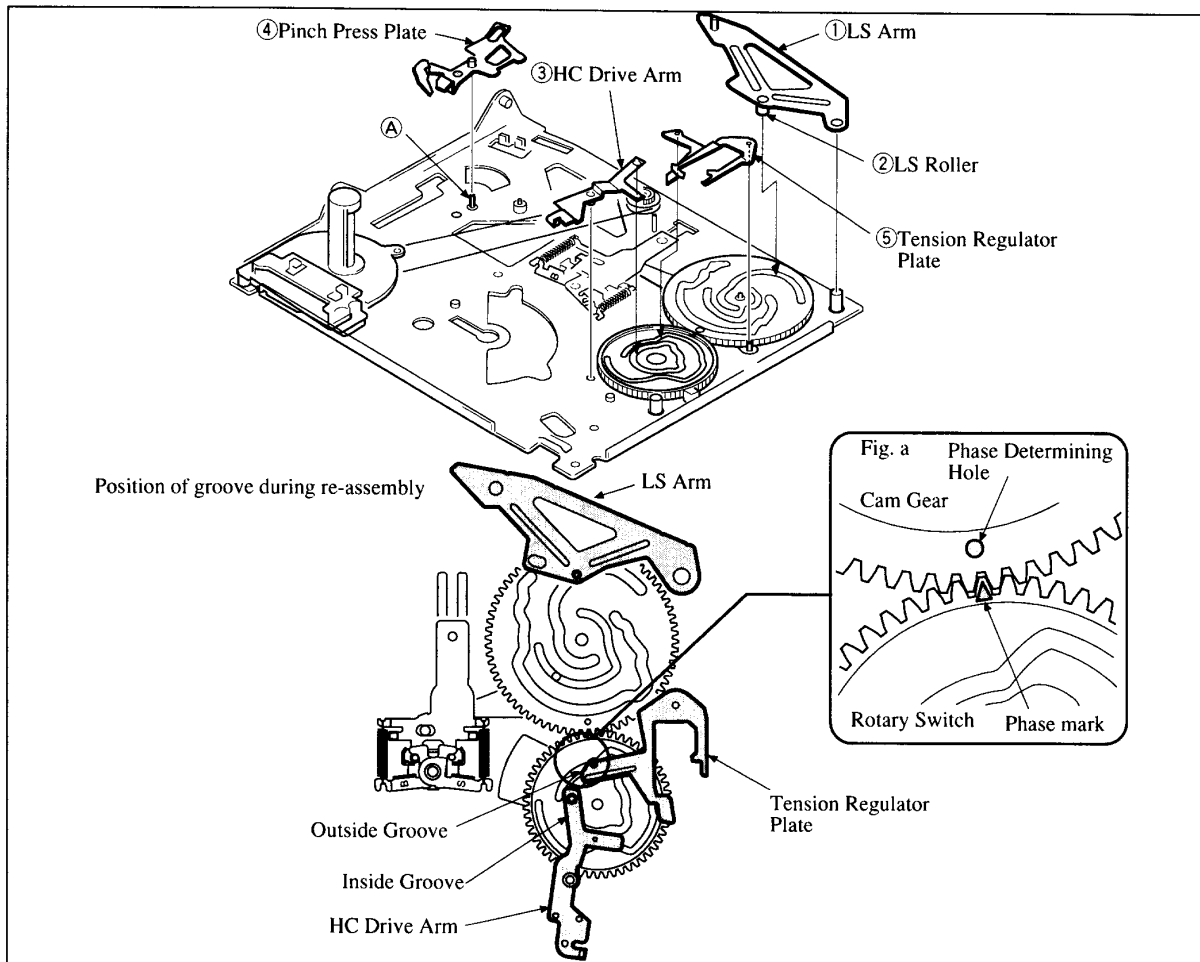


Fig. 19

3-14. Cam Gear (Refer to Fig. 20)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC Motor Assy referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
- 9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
- 10) Remove the Cam Gear ①.

2. Precautions During Re-Assembly

- 1) Before attaching the Cam Gear ①, align the phase mark on the rotary switch until it agrees with the phase-determining hole ① on the mechanism chassis, and align the GL Arm's phase mark ② until it agrees with the phase-determining hole ① on the mechanism chassis. Coat the mechanism's chassis Gear Axis ① with grease SG-055G (Ref. No. J-13).
- 2) Attach the Cam Gear ① so that its phase hole agrees with the phase mark on the rotary switch. (Refer to Fig. a)
- 3) After the Cam Gear ① is attached, coat the GL Arm Axis Block of the cam gear with grease SG-055G (Ref. No. J-13).

Reference : The phase marks of the Cam Gear and Rotary Switch can also be checked from the rear side of mechanism chassis. It means that the phase can be confirmed after mechanism deck is fully re-assembled.

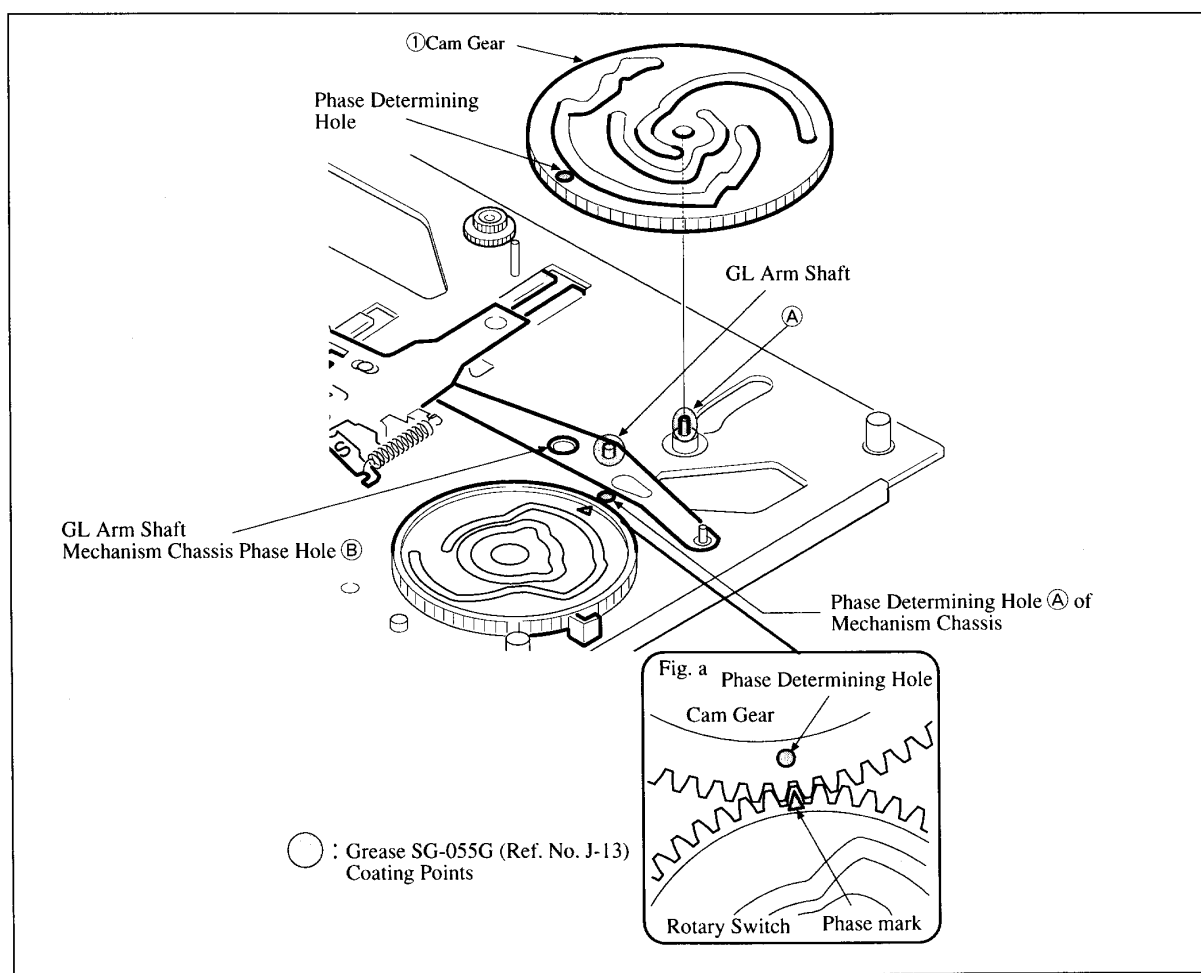


Fig. 20

3-15. GL Slider Assy, GL Arm (Refer to Fig. 21)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC Motor Assy referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
- 9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
- 10) Remove the Cam Gear referring to section 3-14.
- 11) Remove the GL Slider Assy ① by sliding it in the direction of the arrow ④.
- 12) Remove the GL Arm ②.

2. Precautions During Re-Assembly

- 1) The Tension Spring T③ is colored black and the Tension Spring S④ is colored silver.
- 2) Coat the position shown in Fig. a of the GL Slider Assy ① with grease SG-055G (Ref. No. J-13).
- 3) Coat the four points ⑤ where GL slider is attached on the mechanism chassis with grease SG-055G (Ref. No. J-13).
- 4) After attaching the GL Arm ② and the GL Slider Assy, align the GL arm phase hole until it agrees with the phase-determining hole on the mechanism chassis.

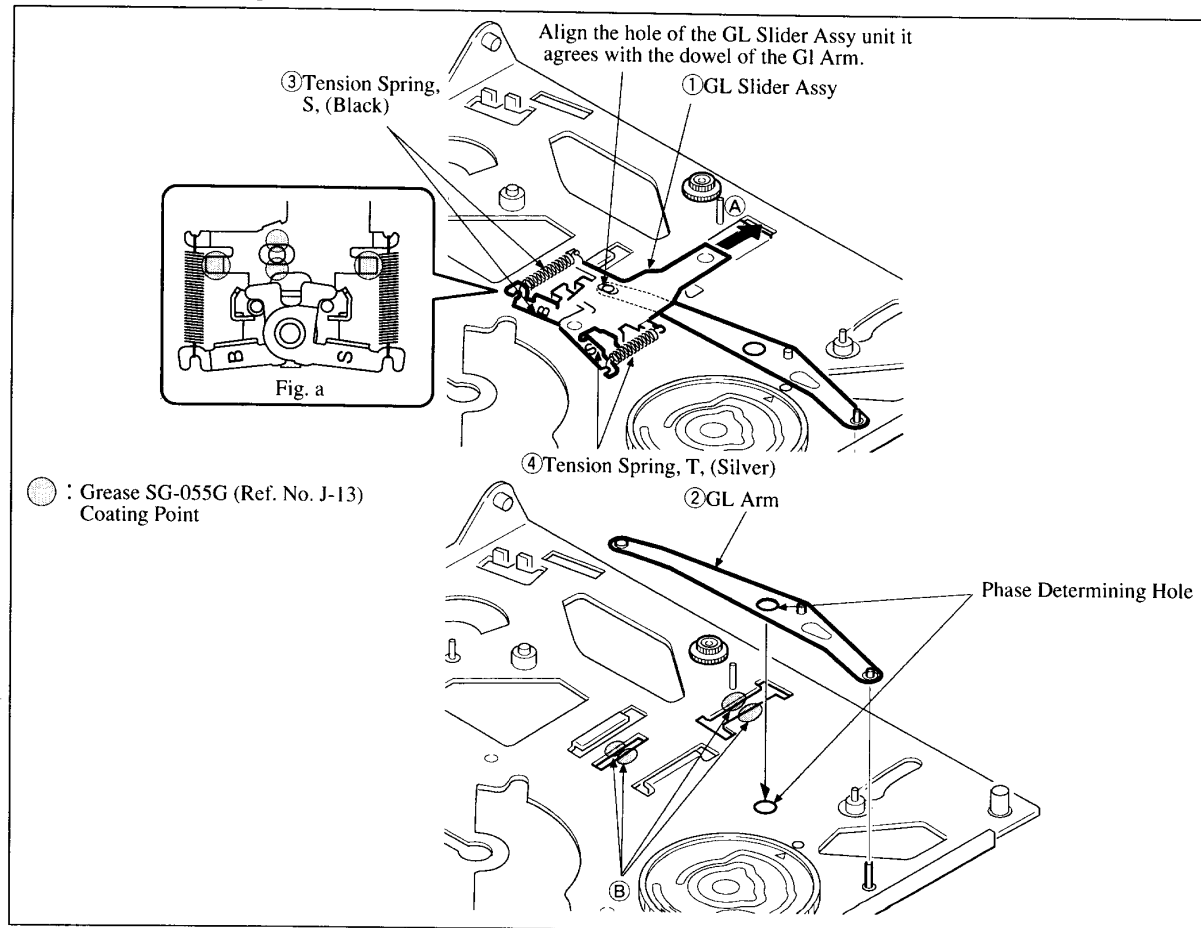


Fig. 21

3-16. Rotary Switch (Refer to Fig. 22)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC Motor Assy referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
- 9) Remove the LS Arm, Tension Regulator Plate, HC Drive Arm and Pinch Press Plate referring to section 3-13.
- 10) Remove the Cam Gear referring to section 3-14.
- 11) Remove soldering the portion ① on the rear of the Rotary Switch. (Pay attention at this moment that the GL Slider and GL Arm do not drop.)
- 12) While lifting up the portion ② about 1 mm (pay attention not to break it), hold the portion ③ and turn it in the direction of the arrow ④ to remove the Rotary Switch.

2. Precautions During Re-Assembly

- 1) Before attaching the Rotary Switch by soldering on the FP-220 board, insert the portion ② dowel into the hole on the mechanism chassis. Confirm that the three claws are engaged with the mechanism chassis.

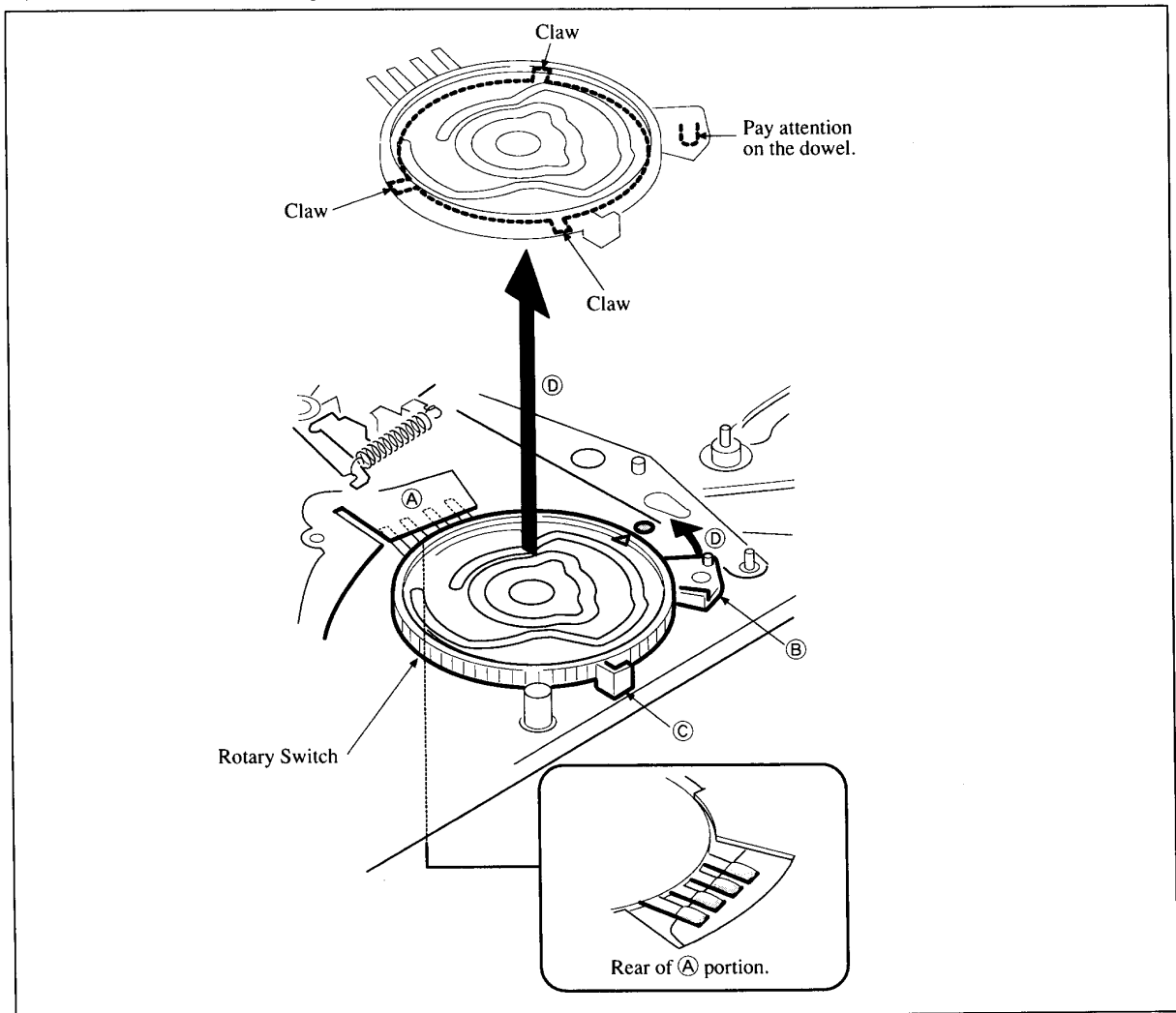


Fig. 22

3-17. Capstan Motor (Refer to Fig. 23)

1. Disassembly Procedure

- 1) Remove the Cassette Compartment Block Assy referring to section 1-1.
- 2) Remove the HC Roller Block Assy referring to section 3-1.
- 3) Remove the Drum Assy referring to section 3-2.
- 4) Remove the Drum Base Block Assy referring to section 3-3.
- 5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
- 6) Remove the LS Chassis Block Assy referring to section 3-5.
- 7) Remove the DC Motor Assy referring to section 3-11.
- 8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
- 9) Remove the Pinch Press Plate referring to section 3-13.
- 10) Remove the screw (M 1.4×6.7) ① and remove the Flexible Board Holder ②.
- 11) Remove the two screws (M 1.4×6.7) ③ and remove the Capstan Motor ④, Timing Belt ⑤ and Capstan Spacer ⑥.
- 12) Remove the washer ⑦ and remove the Changer Gear ⑧.

2. Precautions During Re-Assembly

- 1) Confirm that the timing belt is not twisted.
- 2) Do not touch the capstan with bare hand.
- 3) Lubricate the mechanism chassis's Change Gear shaft ①.
- 4) After attaching the Capstan Motor, perform the capstan azimuth adjustment.

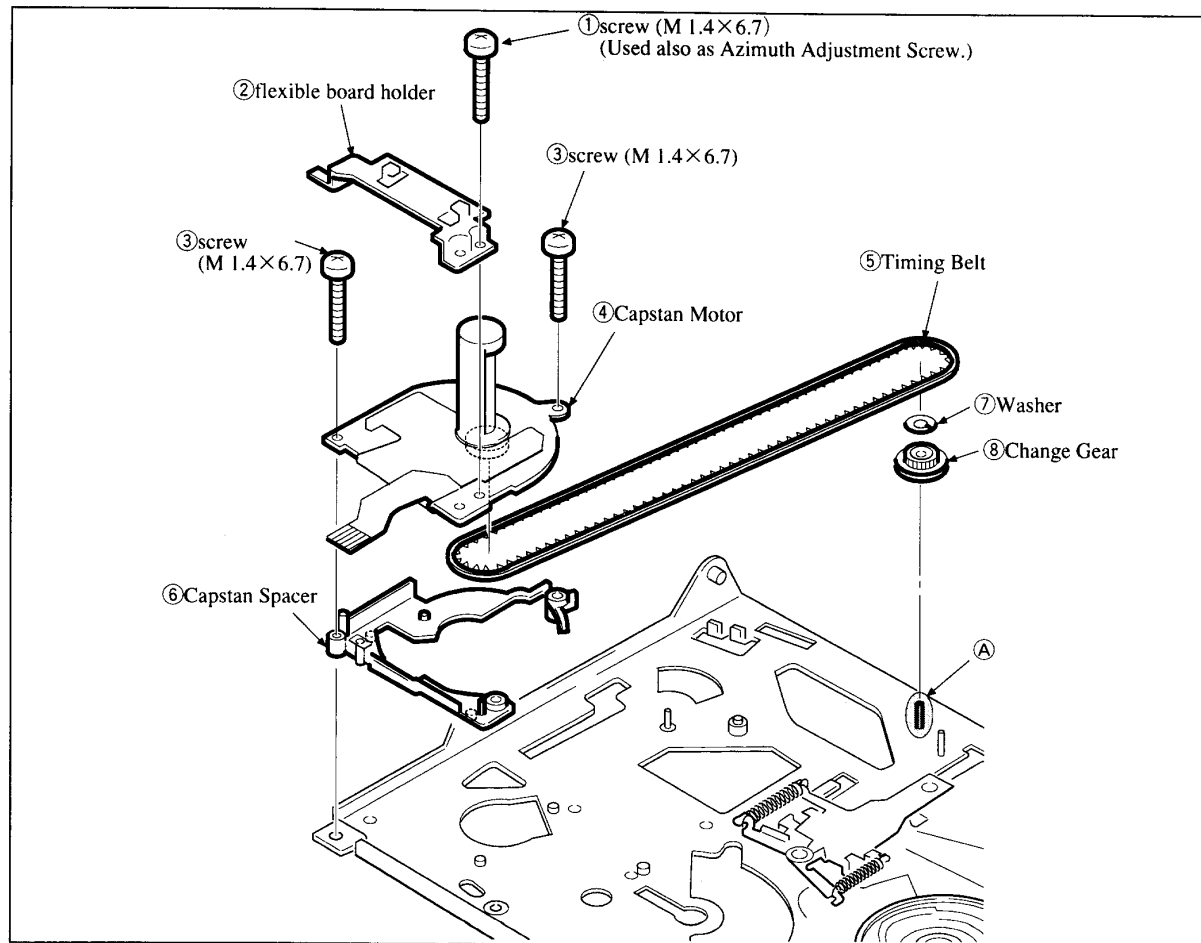
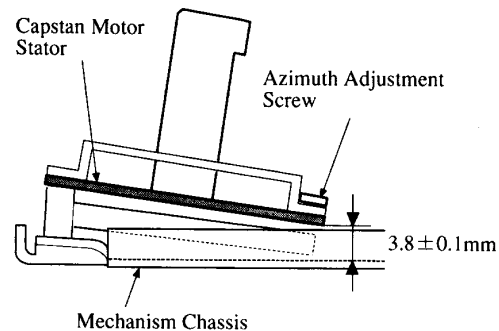


Fig. 23

3-18. Tension Regulator Position Adjustment (Refer to Fig.24)

1. Adjustment Procedure

- 1) Insert a cassette Tape and run the Tape in PB mode.
- 2) While tape is running, confirm that the distance between the LS Chassis and TG-1 Guide's top flange is 8.3mm.
- 3) If not, proceed to step 4).
- 4) Loosen the screw ① (M 1.4×3).
- 5) If the TG-1 Guide is located inside the specified position, move position of the Tension Regulator Band Assy using the FWD B.T. Adjustment tool screwdriver (Ref. No. J-9) as shown in the direction of the arrow (A). If it is located outside, move it in the direction of the arrow (B).
- 6) Tighten the screw ① (M 1.4×3).

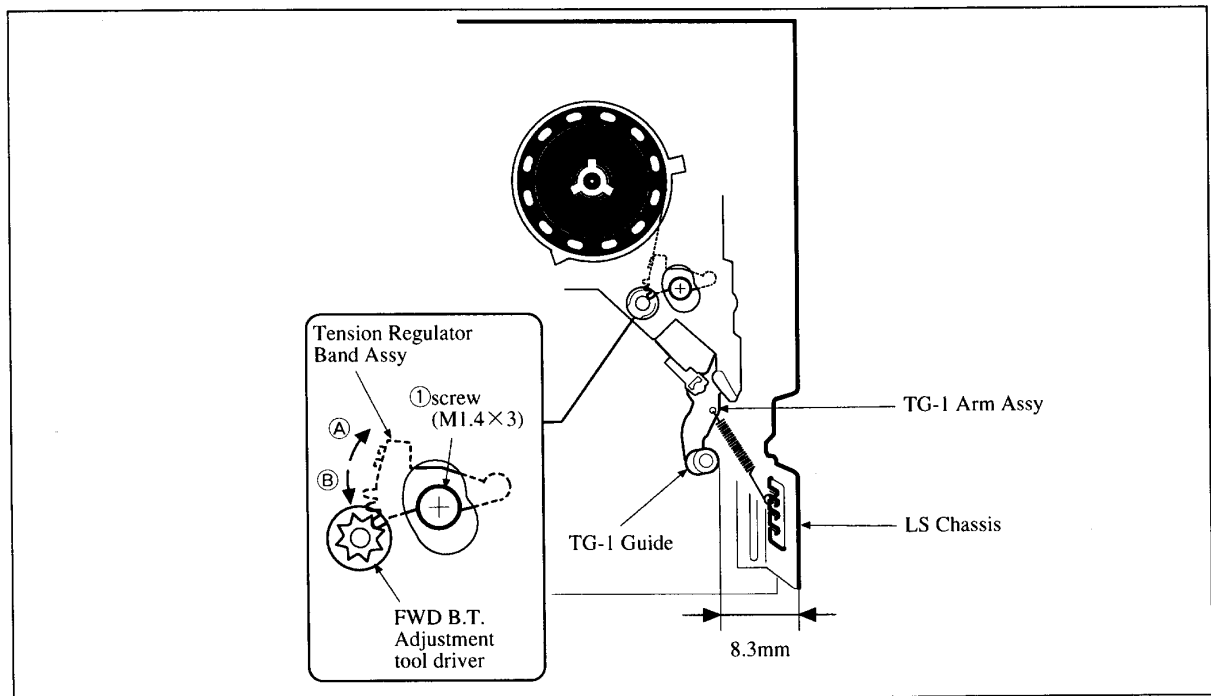


Fig.24

3-19. FWD Tape Hold-Back Tension Adjustment (Refer to Fig. 25)

1. Adjustment Procedure

- 1) Insert the torque measurement cassette to the machine.
- 2) Put the machine in the FWD mode. Confirm that the reading on the S side is in the range from 8.0 to 10.5 g•cm. If the reading is outside the specification range, make the following adjustments.
- 3) If the reading is higher than the specification, change the TG-1 Tension Spring to the side (A).
- 4) If the reading is lower than the specification, change the TG-1 Tension Spring to the side (B).

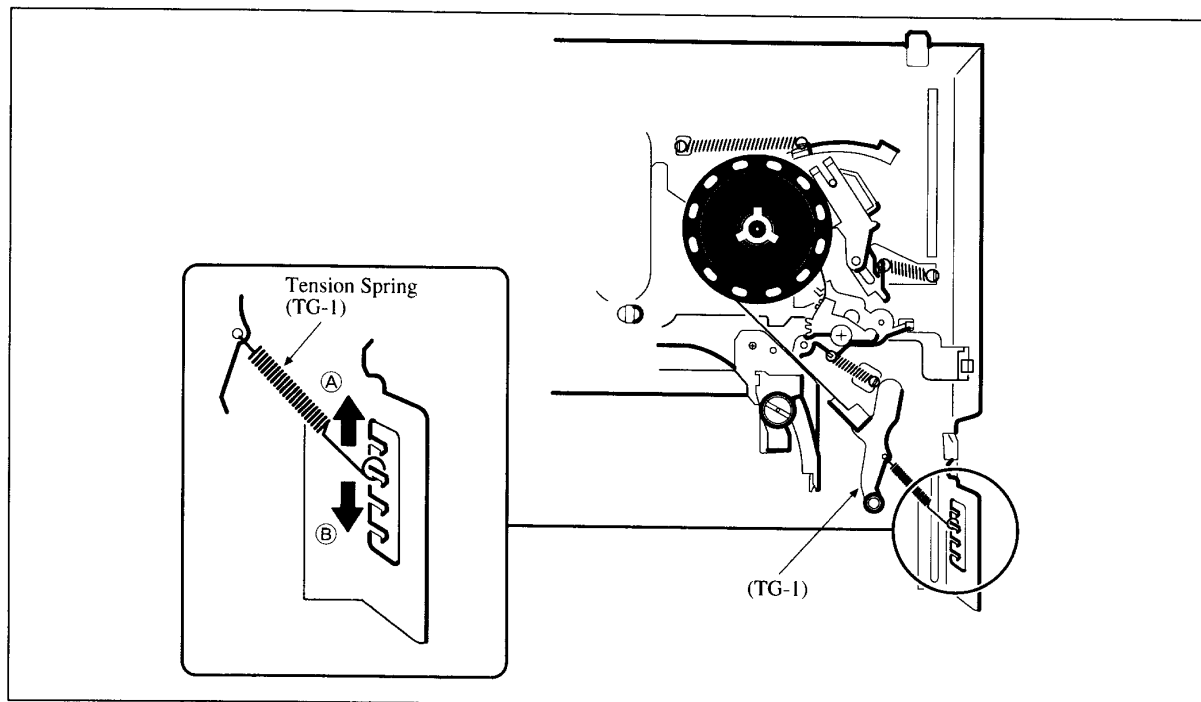


Fig. 25

4. TAPE PATH ADJUSTMENT

Purpose: Adjusts the head linearity.
Adjustment Error: Noise appears on top and bottom of display when playing back the tape recorded by other machines.

4-1. Preparations for Adjustments

- 1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
- 2) Connect the adjustment remote commander to the REMOTE terminal (JACK block).
- 3) Establish the PATH mode using the adjustment remote commander (Track Shift mode)* to cancel auto tracking.
- 4) Connect an oscilloscope.
 CH1: Test connector PB RF terminal
 External trigger: Test connector PB SWP terminal
- 5) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
- 6) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
 If it not flat, perform the following section 4-2 until it is flat.
- 7) After completing the adjustment, release the PATH mode (Track Shift mode)*.

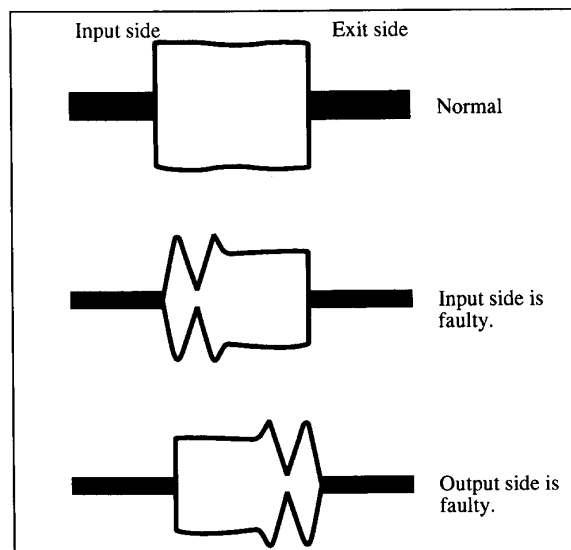


Fig. 26

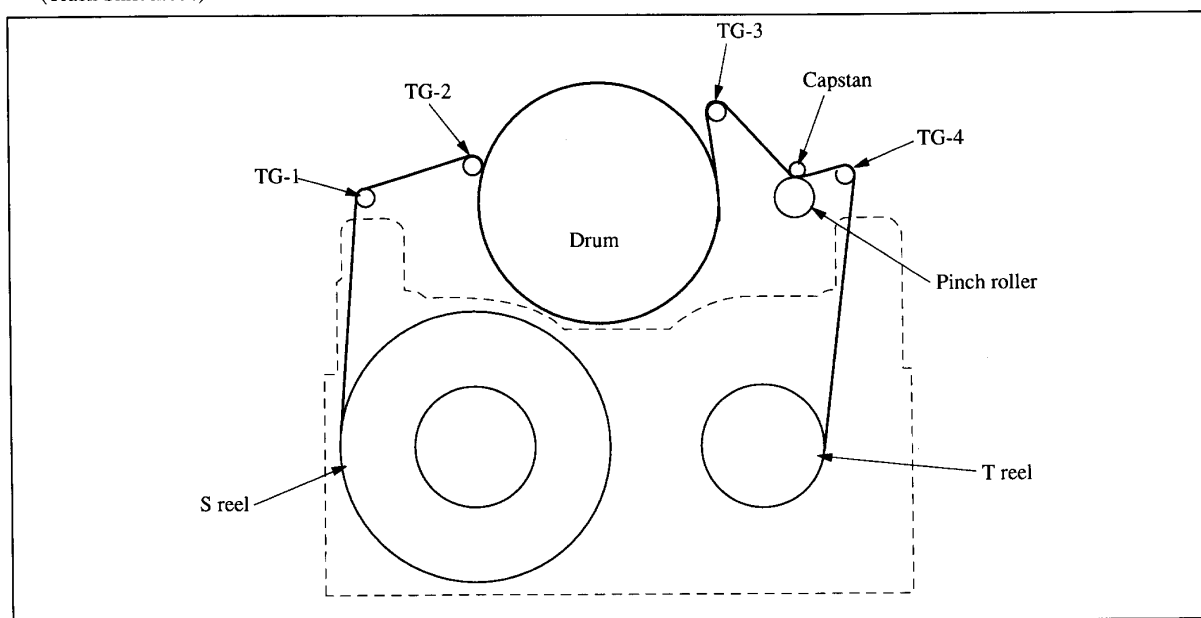


Fig. 27

* How to enter and exit the Track Shift mode. (In the case of CCD-TR420E/TR440E)

Entering the Track Shift mode

1. Select page : 6, address : 00 set data : 01 and press the PAUSE button.
2. Select page : 7, address : 01 set data : 03 and press the PAUSE button.

Exiting the Track Shift mode

1. Select page : 7, address : 01 set data : 00 and press the PAUSE button.
2. Select page : 6, address : 00 set data : 00 and press the PAUSE button.

4-2. Tracking Adjustment (Refer to Fig. 28.)

- 1) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
- 2) Adjust the tape guide No. 2 until the input side waveform becomes flat.
- 3) Adjust the tape guide No. 3 until the input side waveform becomes flat.

☆ Zenith adjustment screws for the TG-2 and TG-3 do not need to be adjusted.

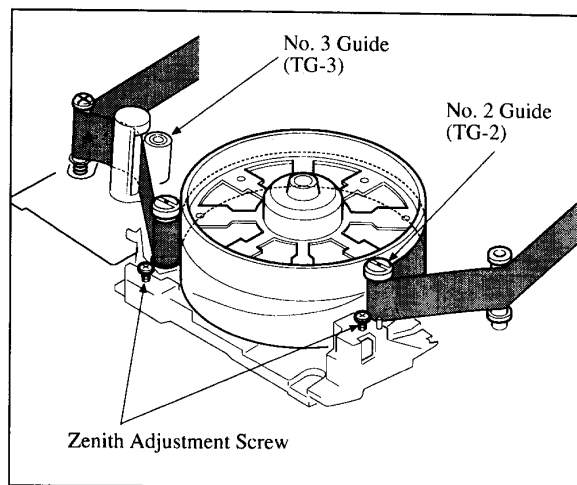


Fig. 28

4-3. No. 4 Guide (TG-4) Adjustment (Refer to Fig. 29.)

- 1) Playback a tape in REV mode.
- 2) Confirm that tape slack does not occur in between the guide No. 3 (TG-3) ① and Capstan ②. If tape slack is found, turn the height adjustment screw ④ of the Guide No. 4 (TG-4) ③ until tape slack is removed.
- 3) Playback a tape in FWD mode. Confirm that tape slack does not occur in between the guide No. 4 (TG-4) ③ and capstan ②. (Specification = 0.5 mm or less) If tape slack of more than 0.5 mm is found, turn the TG-4 nut ④ until the slack is 0.5 mm or less. Playback tape in REV mode and confirm that tape slack in between the guide No. 3 (TG-3) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

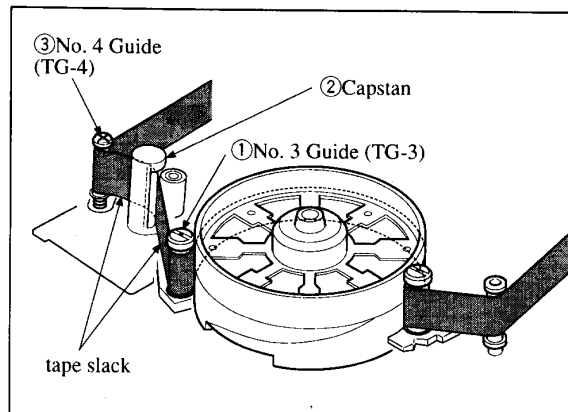


Fig. 29

4-4. CUE, REV Waveforms Check (Refer to Fig. 30.)

- 1) Playback the tracking alignment tape in REV mode.
Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
The pitches are not equally spaced, perform sections "4-2. Tracking Adjustment" and section "4-3. No. 4 Guide Adjustment".
- 2) Playback the tracking alignment tape in CUE mode.
Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
The pitches are not equally spaced, perform section "4-2. Tracking Adjustment".

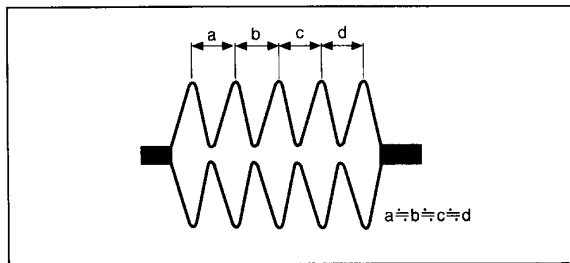


Fig. 30

4-5. Checks After Adjustments

4-5-1. Tracking Check

- 1) Confirm that amplitude of the RF waveform decreases to about 3/4 when the machine enters the PATH mode. (Refer to Fig. 31)
- 2) Confirm that the minimum amplitude (E_{MIN}) of the RF waveform is 65 % or more of the maximum amplitude (E_{MAX}). (Refer to Fig. 32)
- 3) Confirm that the RF waveform does not have too much fluctuation. (Refer to Fig. 33)

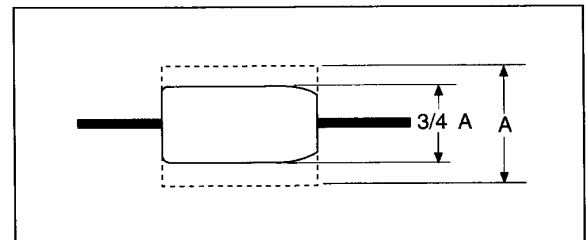


Fig. 31

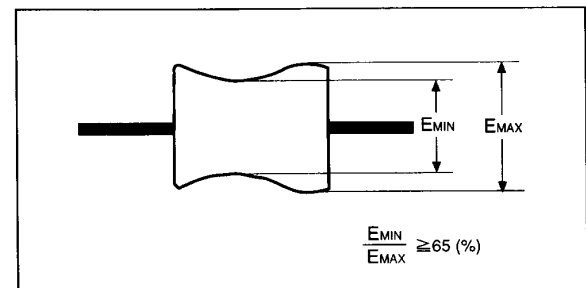


Fig. 32

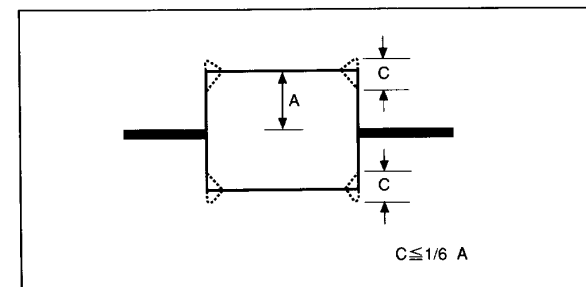


Fig. 33

4-5-2. Waveform Build-up Check (Refer to Fig. 34.)

- 1) Playback the tracking alignment tape.
- 2) Turn OFF the Track Shift mode.
- 3) Eject the tape once, insert and load the tape.
- 4) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
- 5) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
- 6) Repeat the check items 3) to 5) again.

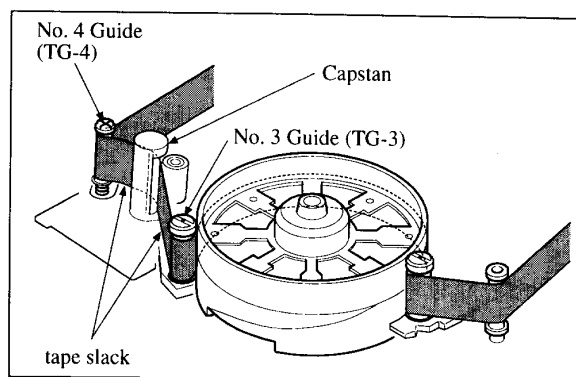


Fig. 34

4-5-3. Tape Pass Check (Refer to Fig. 35.)

- 1) Insert a thin video tape such as P6-120MP (NTSC) or P5-120MP (PAL). Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No. 2, upper flange of guide No. 3, upper and lower flanges of guide No. 4.
- 2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

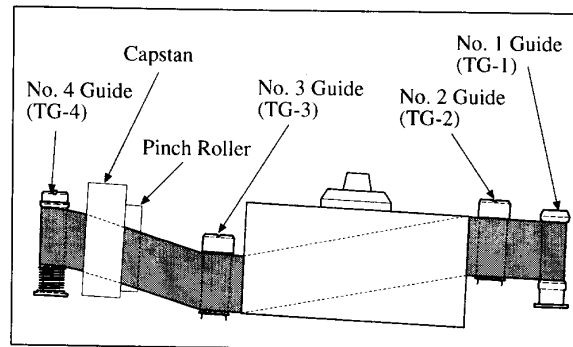
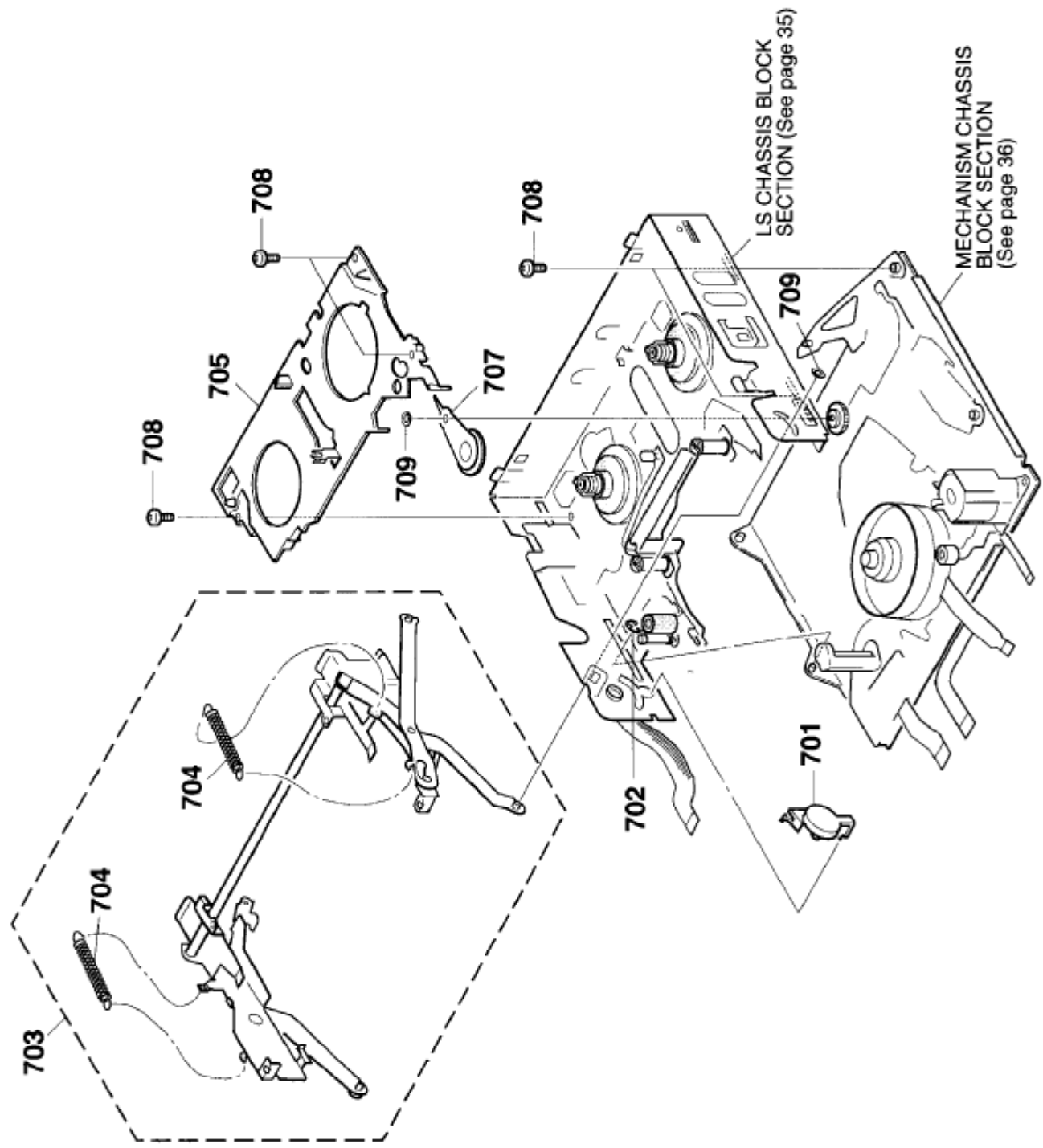
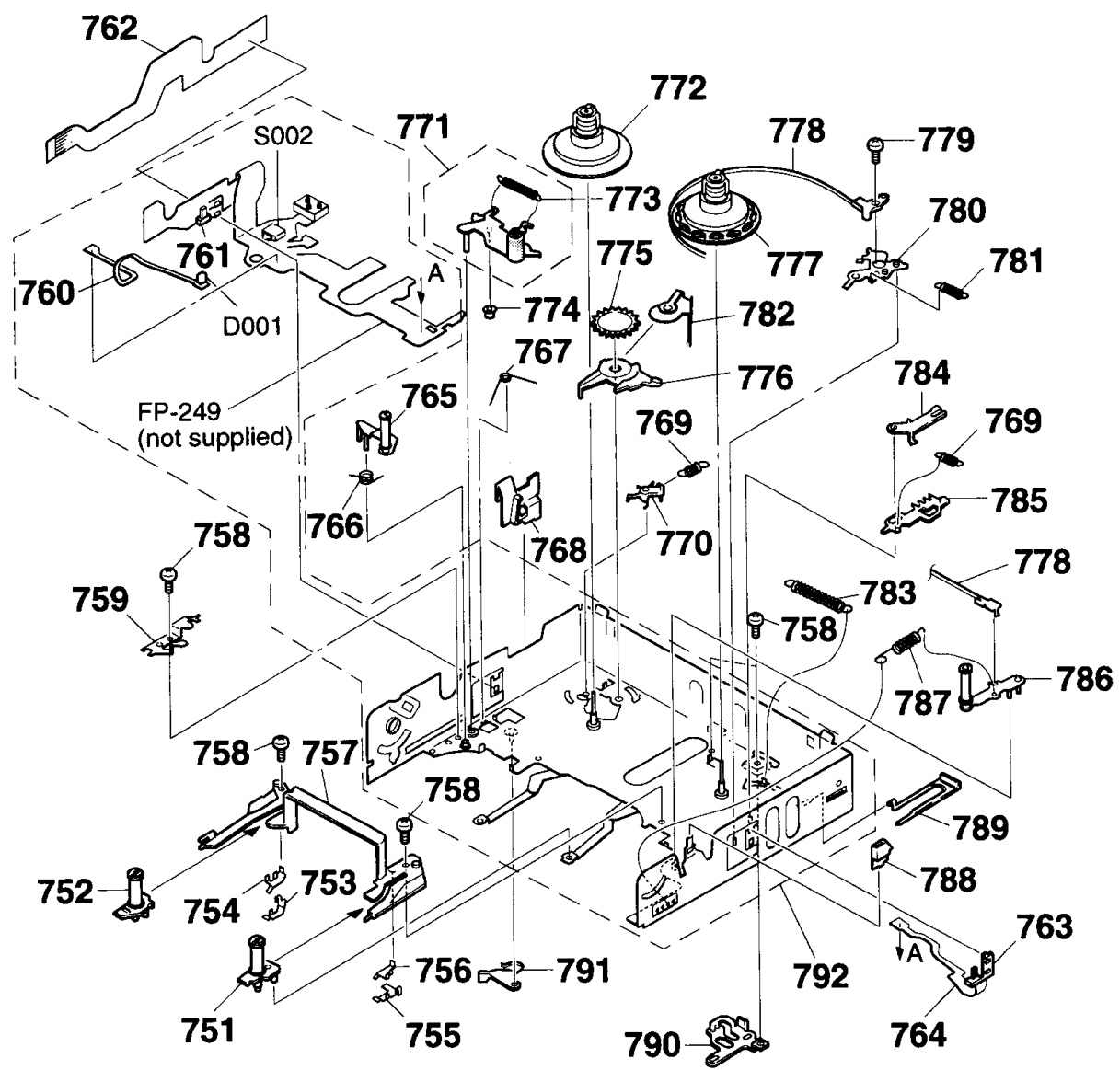


Fig. 35

5-1. Cassette Compartment Block Section



5-2. LS Chassis Block Section



5-3. Mechanism Chassis Block Section

